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Breast-Feeding Survey in Louisiana, 1982: Physicians' Recommendations and Hospital Practices.

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BREAST-FEEDING SURVEY IN LOUISIANA, 1982: PHYSICIANS' RECOMMENDATIONS AND HOSPITAL PRACTICES

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BREAST-FEEDING SURVEY IN LOUISIANA, 1982: PHYSICIANS' RECOMMENDATIONS AND HOSPITAL PRACTICES

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
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in

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M.S., Louisiana State University, 1973
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ABSTRACT

Medical recommendations and hospital practices have been reported to play major roles in determining how a woman chooses to feed her infant. Studies have shown that physicians often do not provide encouragement to women to breast-feed or information to manage breast-feeding successfully. Hospitals have been shown to have routines which are not conducive to lactation.

A mail questionnaire was sent to randomly selected Louisiana family practitioners, general practitioners, obstetricians and pediatricians to determine their breast-feeding recommendations. A different questionnaire was mailed to Louisiana hospitals providing maternity services to determine the breast-feeding practices in these hospitals.

Although most Louisiana physicians considered breast-feeding to be very important and were aware of the many benefits of breast milk for infants, many physicians reported that they discouraged mothers from breast-feeding for reasons not usually considered to be contraindications. Those physicians whose own children had been breast-fed were found to regard breast-feeding as more important than those who did not have breast-fed children, and were more likely to recommend to their own patients those practices currently being recommended by breast-feeding authorities. Louisiana physicians graduating before 1970 were found to be less likely to consider certain conditions as contraindications to breast-feeding than those graduating after 1970. The location of a physician's practice seemd to have little effect on his breast-feeding recommendations.

From the survey response rate, Louisiana hospitals appeared to be very interested in the subject of breast-feeding but the hospitals also reported that breast-feeding was only an occasional practice by maternity patients. Most of the hospitals agreed that staff members were supportive of breast-feeding patients but were undecided about whether or not hospital policy endorsed breast-feeding as the best method of infant feeding or if staff actively encouraged patients to choose breast-feeding.

Chapter I

INTRODUCTION

Until recent times, breast-feeding has been essential to the survival of infants. About four decades ago, breast-feeding began to decline, especially in western cultures (1,2) and the use of cow milk and proprietary formulas became the preferred method of infant feeding (3).

Statement of the Problem

Even through breast-feeding is being recommended as the desirable way to feed infants, many women are still choosing to bottle-feed their infants (1,2,3,4). Breast-feeding has become more popular with higher socioeconomic classes during the last decade, but this trend is not reflected in lower socioeconomic classes (4,5).

Medical recommendations and hospital practices have been reported to play major roles in determining how a woman chooses to feed her infant. Studies have shown that many physicians do not provide information about breast-feeding to women at the time they are making decisions about a feeding method. Reports have also suggested that physicians often do not provide encouragement and support to women who choose to breast-feed (4,5,6,7,8).

Other studies have shown that hospitals may not have routines which are conducive to breast-feeding practices. Many infants are discharged from hospitals on proprietary formulas, and formula samples are given to mothers when they leave the hospital after delivery (9,10).

Purpose of Study

This study was designed to determine the breast-feeding recommendations of Louisiana physicians who have contact with mothers and infants (family practitioners, general practitioners, obstetricians/gynecologists and pediatricians), and to determine hospital practices related to breast-feeding in Louisiana hospitals providing maternity services.

Specific Study Objectives

Physicians

1. To identify Louisiana physicians' opinions as to the importance of breast-feeding by area of specialization (family practitioners, general practitioners, obstetricians/gynecologists and pediatricians).
2. To identify breast-feeding recommendations of Louisiana physicians.
3. To determine differences in breast-feeding recommendations by physicians' areas of specialization.
4. To determine differences in breast-feeding recommendations by location of physicians' practices.
5. To determine differences in breast-feeding recommendations by physicians' year of medical school graduation.
6. To determine differences in breast-feeding recommendations by physicians' own infants' feeding method.

Hospitals

1. To identify medical practices concerning breast-feeding in Louisiana hopsitals providing maternity services.
2. To determine differences in hospital breast-feeding practices by hospital location.
3. To determine differences in hospital breast-feeding practices by hospital size.
4. To determine differences in hospital breast-feeding practices by number of breast-feeding infants in hospital.

5. To determine differences in hospital breast-feeding practices by initiation time of breast-feeding after delivery.

Definitions

1. Bacteriostatic - inhibiting growth of bacteria.
2. Hematocrit - volume percentage of erthrocytes in whole blood.
3. Hypocalcemia - low calcium levels in blood.
4. Hypernatremia - excessive amount of sodium in blood.
5. Immunoglobins - protein constituent providing immunity.
6. Lactose - milk sugar.
7. Meconeum - dark green mucilaginous material in intestine of full-term fetus which is a mixture of secretions of intestinal glands and amniotic fluid.
8. Megaloblastic anemia - anemia charactierzed by large hyperchromic cells.
9. Necrotizing enterocolitis - inflammation of small intestine and colon resulting in tissue death.
10. Parity - condition of a woman with respect to her having borne viable offspring.
11. Peristalsis - wavelike contractions by which the alimentary canal and other organs propel their contents.
12. Phenylalanine - an amino acid.
13. Postpartum - occurring after childbirth.
14. Proprietary formula - commercially prepared infant formula.
15. Tetany - syndrome manifested by sharp flexion of the wrist and ankle joints, muscle twitches, cramps and convulsions due to abnormal calcium metabolism.
16. Tyrosine - an amino acid.

Chapter II

REVIEW OF LITERATURE

Introduction

The advent of modern food technology and changes in social values have played major roles in the decline in popularity of breast-feeding. Urbanization and technological advances have brought about changes in social, medical and dietary trends. The emphasis in nutrition on measurement and analysis encouraged the impression that prepared foods were superior because they could be measured and calculated to meet exact needs. The readily available prepared formulas, bottles and rubber nipples, and the ease of sterilization have also made bottle-feeding popular (4).

Changes in family patterns resulting in smaller, isolated families separated from previous generations have produced changes in infant feeding. No longer are women exposed to a preceding generation of women who breast-fed their infants (5). Therefore, lack of role models probably contributed to the decline in breast-feeding.

The emancipation of women was symbolized by short hair, short skirts, contraceptives, cigarettes and bottle-feeing (4). The increased freedom enjoyed by women resulted in their seeking employment or pursuing other interests outside the home which decreased the incidence of breast-feeding. Upward social mobility toward a more affluent lifestyle has resulted in the two-income family. Most working women are now returning to work very soon after their children are born and are choosing bottle-feeding rather than breast-feeding (6,7).

Increased status became associated with bottle-feeding because it symbolized affluence. The ability to buy cow milk rather than use what was naturally available may be regarded as an example of conspicuous consumption (5).

The western world's attitude toward the female breast as a sex object rather than a means of nurture has influenced many young mothers not to nurse. A nursing woman often was considered embarrassing and even animalistic. The woman who dressed in a provocative fashion to reveal most of her breasts was socially acceptable, while the nursing woman had to be hidden in the ladies' room (8). Some husbands may discourage their wives from breast-feeding because of conflict they feel in regard to a nursing woman's breasts (4).

Because of changes in social values, many women equate breast-feeding with ignorance and poverty (9). Society has accepted these changes in values and medical practice has become oriented to the bottle-fed rather than the breast-fed infant (10).

The practice of bottle-feeding spread from the United States and other Western societies into other areas of the world with often disasterous results. In developing countries, because of poor hygiene, misinformation and inadequate supplies, bottle-feeding has often resulted in sickness and death for many infants (4,5).

Breast-feeding in the United States

Decline

Hirschman and Sweet (11) reported that the percentage of mothers breast-feeding their first infants in the United States declined from 77 percent in 1940 to 32 percent in 1965. Meyer (12) reported

estimates of breast-feeding by patients in maternity hospitals to be 18 percent in 1966, 21 percent in 1956 and 38 percent in 1946.

Information reported by Meyer (12) in 1968 showed 59 percent of infants in Louisiana were totally breast-fed in 1946, 39 percent in 1956 and only 20 percent in 1966. Langham (13) reported in her study of infant feeding practices in Louisiana in 1971 that of approximately one-thousand mothers surveyed in child health conferences in Louisiana health units, only 189 reported breast-feeding. Most breast-feeding experiences were token attempts. Fourteen percent reported breast-feeding less than one week; 22 percent less than two weeks; 44 percent less than one month and 86 percent less than three months. Of the mothers surveyed, 83 percent supplemented breast-feeding with formula.

Current Trends

In the past decade breast-feeding has become more popular in the United States and other western nations (14,15,16). A survey done in 1977 by Ross Laboratories (17) indicated that about one-half of newborn discharged from hospitals were being at least partially breast-fed.

Even though breast-feeding is increasing at the time of postpartal hospital stay, many women discontinue breast-feeding shortly after discharge. Breast-feeding in western countries is often only of a token nature combined with the use of bottles (8).

Relationship of education and income to incidence of breast-feeding. Although there appears to be no single factor that explains differences in breast-feeding trends over time (18), many studies have

shown the incidence of breast-feeding increases with increased socioeconomic status and educational levels (14,15,19). The return to breast-feeding during the last decade has been a middle-class phenomenon brought about by an increased interest in things natural and an increased awareness of the benefits of breast-feeding (8).

A study reported by Martinez and Nalezienski (14) in 1978 was designed to show the incidence of breast-feeding in hospitals, at two months, three to four months and five to six months of age, and to relate demographic data to this information. The study showed that breast-feeding has increased at all ages surveyed from 1971-1978. The incidence in hospitals increased from 24.7 percent to 46.6 percent; at two months, from 13.9 percent to 34.9 percent; at three to four months, from 8.2 percent to 26.8 percent; and at five to six months, from 5.5 percent to 20.5 percent during the period of 1971-1978.

The highest incidence of breast-feeding occurred amont those mothers with at least some college education and those with higher incomes. Women with grade and high school educations increased breast-feeding during hopsital stays from 19.5 percent in 1971 to 40.2 percent in 1978, while women with some college attendance increased from 42.1 percent to 63.4 percent. Among those with infants aged two months, women with grade or high school educations increased breast-feeding from 9.8 percent to 28.5 percent and women with some college increased from 27.6 percent to 52 percent for the period 1971-1978.

Cole (19) surveyed a group of new mothers in Boston and found that those with high school educations reported 44 percent

breast-feeding, with some college or degree, 62 percent and those with graduate or professional degrees, 65 percent.

A 1975 survey by Berkelhamer et al. (20) found that of low-income women surveyed at the University of Chicago Lying-In Hospital, only 4 percent planned to breast-feed totally. The study reported that only half of the women surveyed had completed high school.

A recent survey in East Harlem of low-income women participating in selected prenatal clinics by Bowering et al. (21) found there were no women choosing to breast-feed. Oseid (22) reported that in a New Orleans public school for young pregnant women and new mothers, none had ever tried to breast-feed and most had never even seen anyone nurse an infant.

Race. Hendershot (16) reported a great difference in the percentage of white and black mothers who breast-fed their infants between 1973 - 1975. During these years, babies born to white mothers in the selected sample were more than twice as likely to be breast-fed as babies born to black mothers. The percentage of white mothers breast-feeding was 33 percent and that of black mothers 15 percent.

Cultural influences. Breast-feeding is both a biological function and a social behavior which must be learned in supportive interaction systems (6). Information on breast-feeding is often difficult to obtain from medical professionals. Routines in many hospitals have become oriented to artificial feeding with staff assuming major feeding responsibilities of infants (7). Proprietary formula samples are often given to new mothers upon discharge from hospitals.

Even though breast-feeding has been promoted as the desirable way to feed infants by the American Academy of Pediatrics (23) and other major institutions and organizations concerned with infant feeding, negative influences have become deeply rooted in western culture resulting in only a small number of women who are able to successfully breast-feed their infants (7).

Comparison of Breast-Feeding and Bottle-Feeding

Bottle-feeding with cow milk has been one of the most widely used alternatives to breast-feeding but there is much evidence that human milk has many advantages for human infants which cow milk does not offer (1,8). Jelliffe and Jelliffe (24) stated that cow milk and human milk are similar in only two respects, water and lactose. Becuase of the many differences, the appropriate choice for human infants is human milk.

Proprietary formulas provide the best alternative to breast-feeding for meeting the nutritional needs of infants during the first year of life. A large number of commercial formulas are available most of which are prepared from nonfat cow milk, vegetable oils and added carbohydrate, usually lactose or corn syrup solids. Standards have been established for the nutrient content of formulas by the Food and Drug Administration based on recommendations by the Committee on Nutrition of the American Academy of Pediatrics (3).

Colostrum

Colostrum, the first milk secreted for a few days postpartum, is a clear or yellowish fluid which contains more protein, vitamin A,

minerals and immunoglobins than mature milk (7). The function of colostrum is primarily anti-infective (5). Immunoglobins in colostrum, primarily IgA, IgG, IgM, IgD and IgE, offer protection against certain organisms such as Pneumococci, Coxsackie, enteropathogenic strains of Escherichia coli, Salmonella, Shigella and other enteric pathogens (25). These antibodies depend on the mother's level of immunity but are usually much higher than in mature milk (26,27).

Colostrum also has a laxative or proteolytic effect which helps to clear the infant's digestive system of meconeum through stimulation of peristalsis (5). Colostrum has an emollient action which helps to keep the nipples from becoming irritated, a problem which often occurs during the first days of nursing (28).

Mature Milk

Depending on the mother's parity and the frequency of suckling, mature milk will be produced from two to ten days postpartum (7). The concentration of immunoglobins and total protein decreases while lactose, fat and total caloric content increase. The amounts of fat soluble and water soluble vitamins increase in mature milk (4).

Protein. Human milk contains less protein than cow milk. Human infants grow more slowly than calves and do not need as much protein (5). Human milk contains about 0.8 to 0.9 gm/dl of true protein and 0.2 to 0.3 gm/dl of nonprotein nitrogen compounds calculated as protein. The protein is of high nutritional quality and is absorbed efficiently. The protein content of cow milk is approximately 3.4 gm/dl while that of most commercial formulas is 1.5 gm/dl (29).

The dominant protein in human milk are lactalbumins and lactoglobulins while that in cow milk is casein (7,29). Casein from cow milk has a high curd tension which percipitates into indigestiable curds in the infant's digestive system unless properly treated by homogenization, acidification or heating to reduce curd tension (3).

Amino acids. The amino acid content of human and cow milk is markedly different. There is a higher cysteine/methionine ratio in human milk than in cow milk. This is important because infants have a limited ability to convert methionine to cysteine due to low enzymatic activity of cystathionase. Cysteine is required for central nervous system development (30). Human milk also has lower levels of phenylalanine and tyrosine than cow milk. Human infants, especially premature infants, have a limited ability to metabolize these compounds (5).

Electrolytes and water. Because of the lower protein, sodium, potassium and chloride content of human milk, the infant who is totally breast-fed needs little extra water, if any. This is due to the lowered urea and electrolyte load for the kidneys to excrete (19). A high renal solute load in babies who are losing water through diarrhea or sweat can lead to dehydration and hypernatremia (23).

Fat. Human milk is higher in total fat than cow milk or formula. Human milk fat is almost completely absorbed. This is especially important for pre-term infants who may have trouble meeting energy requirements (31).

Fatty acids. Levels of essential fatty acids are greater in breast milk, especially linoleic acid, which may be seven to eight

times as high as in cow milk (5,32). Proprietary formulas, made with vegetable oils, contain adequate amounts of unsaturated fatty acids (4). Recent studies on human milk composition suggest that milk is reflecting recent dietary trends in the American diet by having a higher proportion of unsaturated fatty acids and a two to three-fold increase in linoleic acid (33).

Carbohydrate. Lactose is the carbohydrate contained in human and cow milk, and supplies all or most of the carbohydrate in milk-based formulas. Carbohydrate provides 37 percent of calories in human milk, 29 percent of calories in cow milk and approximately 42 percent of calories in commercially prepared formulas (3).

Vitamins. Human milk has higher levels of vitamin A, ascorbic acid and Vitamin E than cow milk and the content of these vitamins in breast milk appears to be adequate for infants (4,5). The vitamin E in breast milk is present in the appropriate ratio with the polyunsaturated fatty acids present (5).

Findings indicate that human milk contains sufficient B-complex vitamins (4,5). A breast-fed infant with severe megaloblastic anemia, coma and hyperpigmentation of the extremeties of a strict vegetarian mother was reported by Higgenbottom et al. (34). Vegetarian mothers who plan to breast-feed should be informed of the necessity of vitamin B_{12} supplementation.

Some cases of vitamin D - deficient rickets have been reported by Backrach et al. (35) in breast-fed infants in Philadelphia. Vitamin D deficiency was found in both the mothers and infants. Exposure to sunlight was very limited due to the fact that all reported

cases had black skin, wore long garments because of religious affiliations, and lived in an urban setting. The American Academy of Pediatrics (36) recommends that in cases where climatic and social conditions interfere with irradiation of vitamin D precursors in the skin of breast-fed infants and their mothers, supplementation of 400 I.U. of vitamin D should be given to the infants. Both cow milk and formulas are supplemented with vitamin D.

Vitamin K is found in somewhat lower concentrations in human milk than in cow milk. The gut of a newborn is sterile for the first few days of life so there are no intestinal flora to produce vitamin K (30). Recommendations that mothers eat foods rich in vitamin K during pregnancy and lactation, and that vitamin K be administered parenterally to mothers during, or to neonates following, difficult or prolonged labor have been made (37).

Standards for vitamin and mineral content of proprietary formulas have been established and supplements are added to meet recommendations (23).

Minerals. Iron absorption from human milk has been shown to be much more efficient than absorption from cow milk or formula (38,39). The low protein, high lactose, low phosphorus content of breast milk increases iron absorption (39). Absorption of available iron from human milk is 49 percent, while iron absorption is only 10 percent from cow milk and 4 percent from iron-fortified formulas (4). The increased absorption of iron in human milk has been confirmed in adults who were given milk with tagged iron (40).

Coulson et al. reported that a study of 66 breast-fed infants

who received no iron supplementation showed that all had normal or above normal hematocrits. Jelliffe (42) suggested that breast-fed infants who are not iron-deficient at birth can absorb sufficient iron until they triple their birthweights.

The Committee on Nutrition of the American Academy of Pediatrics (36) has noted that iron-deficiency is rare in breast-fed infants. This may be attributed to increased iron absorption with breast milk, and the absence of gastrointestinal blood loss which sometimes occurs in infants receiving cow milk. The Committee recommends an iron source (iron-fortified infant cereal) by about six months of age for breast-fed infants.

The bacteriostatic effect of lactoferrin, an iron-binding protein found in human milk, is inhibited by iron. The bacteriostatic action which deprives E. coli and some yeasts of iron and inhibits their growth has been shown to be limited in the presence of supplemental iron (29,43).

Calcium in human milk, although considerably less than in cow milk, is better absorbed and associated with a much lower incidence of hypocalcemia in newborns (5). The ratio of calcium to phosphorus is much lower in cow milk than in human milk. The low calcium to phosphorus ratio and the high phosphorus content of cow milk have been associated with an incidence of hypocalcemia and tetany in newborns (22). Bottle-fed infants, who ingest more phosphorus than breast-fed babies, often retain much of this extra phosphorus because the immature kidneys have not adapted to excretion of increased phosphorus (3).

Fluoride levels in human milk and cow milk are low (4). The

Committee on Nutrition of the American Academy of Pediatrics (36,44) recommends that fluoride supplements, 0.25 mg/day, be given to breast-fed infants shortly after birth in the expectation that this would have a beneficial effect during the period of active mineralization of bones and teeth. The Committee reported that fluoride supplementation can be delayed until six months of age and still have a satisfactory effect on reduction of dental caries.

Immunologic Activity

Evidence presented by many studies has suggested that breast-fed infants have lower mortality and morbidity than bottle-fed infants (45,46,47,48,49,50,51). The lactating breast produces specific antibodies in response to pathogens reaching breast tissue from the lacteal ducts and are in the milk within eight hours following stimulation (48). Breast milk provides numerous defense mechanisms which result in very low incidences of diarrhea, necrotizing entercolitis, respiratory infections and gastroenteritis as compared to bottle-fed infants (22,43). A study done in upstate New York reported that breast-fed infants had significantly fewer serious illnesses than bottle-fed infants and the age of onset of serious illnesses was delayed in breast-fed infants (46).

Human milk contains several antimicrobial agents that protect breast-fed infants. Lactoferrin, an iron-binding protein found in human milk, inhibits growth of E. coli and yeasts (22,23,29,43). Defense against enteric infections may be provided by lysozyme, lymphoid cells, macrophages and neutrophils which are present in human milk (29,43).

The acidic environment of human milk prevents growth of enteric pathogens, Shigella, E. coli and yeast. The acidic environment is due to the bifidus factor, a nitrogen-containing carbohydrate. Bifidus factor promotes growth of Lactobacillus bifida, a micro-organism that ferments lactose to acetic acid and lactic acids. The high lactose content of human milk promotes colonization of lactobacillus upon which bifidus factor may act. The low pH is established by the production of acids and is maintained by the lower buffering capacity of breast milk due to less phosphorus and protein (26,43). Cow milk which is lower in lactose and bifidus factor and has greater amounts of protein and phosphorus (buffering agents), results in a higher gastrointestinal pH that is more conducive to growth of pathogenic organisms (43).

All classes of immunoglobins are found in human milk (4). Immunoglobins are less concentrated in mature milk than in colostrum but still are an important means of defense against enteric infections in breast-fed infants. Secretory IgA, which is resistant to proteolysis and which confers passive mucosal protection of the gastrointestinal tract against penetration of intestinal organisms and antigens, is the predominant immunoglobin in human milk (31). Secretory IgA has been shown to interfere with bacterial adherence to epithelial cells which prevents establishment of bacteria on mucosal surfaces. Protection is given against neonatal infections, septecemia, meningitis, polio, Streptococci, Pneumonococci, Shigella, protozoa, Salmonella, Clostridium tetani, influenza and others. The mother's level of immunity determines the extent of protection provided to the infant (3,7,22,26,43). Other antibodies IgG, IgM, IgD and IgE are present in human milk also (22,26,43).

Human milk protects the human infant against staphylococcal infections. This protection was known to exist before the era of antibodies. The compound responsible for protection appears to be a phospholipid and has been termed "resistance factor" (4).

Otitis Media

Otitis media is less common among breast-fed than bottle-fed infants. Milk may enter the eustachian tubes of an infant as he drinks from a propped bottle while lying on his back. The infant's position during breast-feeding diminishes the likelihood for this route of infection to develop (22).

Sudden Infant Death Syndrome

Sudden infant death syndrome seems to occur more often in bottle-fed than breast-fed infants. Investigation into the possible relationship between the type of milk and sudden infant death syndrome is being investigated (5).

Obesity

There is some evidence that breast-fed infants are less likely to become obese than bottle-fed infants but this is controversial. Studies have compared the incidence of infantile obesity and childhood obesity with breast-fed and bottle-fed infants and have shown a decreased incidence in breast-fed infants (52,53,54). Ounsted and Sleigh (56) suggested that there is a powerful self-regulatory appetite control center within infants and that this functions best when they are totally breast-fed. Force feeding is easier for a mother when she is giving a bottle of milk because she can see how much the baby is consuming (3).

A report by the Food and Nutrition Board, National Academy of Science (56), reported that bottle-fed and breast-fed babies are different in weight and length during infancy but lose these differences by eight years of age. Breast-feeding cannot ensure that an infant will not become obese because there are other predisposing factors to obesity (7)

Allergies

There is favorable evidence that human milk prevents infants from developing allergies. Intact proteins from cow milk or other foods are more likely to penetrate the gastrointestinal epithelium during the first six months of life (3,22). Secretory IgA in colostrum and breast milk prevent absorption of foreign macromoles in the immature infant's system by decreasing their adherence to cell walls (45). Breast milk protein is species specific and, therefore, nonallergenic for human infants (4).

Allergic syndromes associated with cow milk allergy include gastroenteropathy, atopic dermatis, rhinitis, chronic pulmonary disease, eosinophilia and failure to thrive. Gastrointestinal symptoms include spitting, colic, diarrhea, blood in stools, vomiting, weight loss, malabsorption, colitis and failure to thrive (5). As permeability of the intestine decreases with age, the infant's sensitivity is more dependent on allergic predisposition than on the protective effects of breast milk (7).

Effect of Maternal Diet on Human Milk

The effects of the mother's nutritional status on the quality and quantity of milk is not completely known. Composition and output of human milk varies according to the state of lactation, maternal nutrition and individual variation (57). Malnutrition seems to have an effect on total volume of milk produced and in countries where food supplies vary with seasons, milk supplies may drop 100 ml/day during periods of food shortages (4).

Protein

Protein levels in breast milk do not seem to vary with maternal diet. Investigators have reported that women from impoverished areas of developing countries produce milk that is similar in protein to women in more affluent areas (5,58,59).

Energy

Caloric content of breast milk is a product of the volume of milk and its fat, lactose and possibly protein content. In areas in which mothers are poorly nourished, volume of milk will be less, thus reducing caloric content of breast milk (5,60). The milk output of extremely malnourished mothers during periods of famine declines and ultimately ceases, with fatal consequences for the nursing baby. The nutritional point at which human lactation becomes seriously affected or ceases completely is not known but there are reports of early marasmus in breast-fed infants in very poorly nourished women (5).

Fat

Maternal diet seems to affect the constituents of human milk

lipids but not the amount of total fat. The average fat content of mature milk samples has been reported to vary in mature milk from 2.1 percent to 3.33 percent. A diet rich in polyunsaturated fat will result in an increased percentage of polyunsaturated fat in the milk without changing the total fat content (4). A study by Potter and Nestel (61) reported that nursing mothers in Australia fed low cholesterol, high polyunsaturated fat diets showed lowered maternal blood cholesterol levels, but cholesterol content of breast milk was unaffected.

Volume and Fluids

Lawrence (4) reported that there is no data to support the assumptions that increasing fluid intake will increase milk volume or that restricting fluid will decrease milk volume. Nursing mothers have increased thirst which maintains a need for increased fluid intake. Decreased fluid consumption results in diminished urine production, not decreased milk. This is due to the renal antidiuretic, water-spring effect of prolactin (62).

Water Soluble Vitamins

Water soluble vitamin levels fluctuate with changes in maternal diets. Vitamin C levels of humans reflect ingestion of vitamin C beverages within thirty minutes of intake. Infantile beriberi may occur in infants whose mothers have diets deficient in thiamin (4). The influence of maternal diet on vitamin B_{12} levels has been shown in the development of megaloblastic anemia and methylmalonic aciduria in a breast-fed infant of a strict vegetarian mother (34). Lawrence (4) suggested supplementation of vitamin B_{12}, up to 4 mg/day, for lactating women with limited animal protein intake.

Fat Soluble Vitamins

A study of Gebre-Medhin et al. (63) reported that underpriviliged mothers with low intakes of vitamin A produced milk which was significantly lower in vitamin A content than milk of women with adequate intakes of the vitamin. Levels of vitamin A may be marginal in the United States and may vary seasonally. Vitamins D and E levels in milk do not seem to be affected by maternal diet (4)

Minerals

Calcium content of milk appears to be maintained despite markedly deficient intake. Milk will be produced at the expense of the mother's own calcium stores (7).

Dietary Recommendations for Lactation

Dietary recommendations for lactating women include an increase of 20 gm protein above the requirement for a non-pregnant woman. An increase of 500 Kcal/day for the first three months of lactation and increasing this if lactation is extended beyond three months is recommended. Other nutrients are increased in varying amounts for pregnancy and lactation (64).

Additional calories should be supplied by foods of high nutritional quality that contain extra protein, vitamins and minerals needed for milk production. Nursing women usually lose the extra weight of pregnancy faster than non-nursing women becuase of the energy needed for milk production. Women may be more eager to try breast-feeding when they learn about this beneficial side effect (7).

Health Benefits for the Nursing Mother

Women who do not nurse their infants often have prolonged and less complete uterine involution than nursing women (66). Oxytocin, the facilitator of milk ejection, also causes uterine contractions (28).

Lactation may provide a contraceptive effect for a period of time since unsupplemented breast-feeding prolongs postpartum amenorrhea and inhibits ovulation. The sucking stimulus of an infant who is totally breast-fed promotes and maintains high prolactin levels which suppress ovarian function (4). The contraceptive effect of breast-feeding reduces birthrate on a population basis (7). A nursing mother is less likely to become pregnant but should be advised to use some other method of birth control (not oral contraceptives) to prevent pregnancy (8).

Breast-feeding has been linked to a lower incidence of cancer in developing countries where breast-feeding is widespread and prolonged (67). Recent findings have shown that decreased frequency of breast cancer in these areas is probably due to a combination of factors, including early and frequent pregnancy and large families, along with prolonged lactation (5).

Bonding

Many nursing mothers have reported formation of a special bond between themselves and their infants (68). A strong individualized attachment to the mother is created as the infant nurses (69). The mother may also gain a special sense of fulfillment from the experience (7).

Disadvantages of Breast-Feeding

Cultural

According to Lawrence(4), disadvantages to breast-feeding are those factors perceived by the mother as being an inconvenience to herself since there are no known disadvantages for the infant. The western culture, where nursing in public is not considered commonplace as it is in other societies, creastes an atmosphere for women to develop concerns about breast-feeding (4).

Feelings of shame, modesty, embarrassment and distaste are feelings that have been described in surveys evaluating the decline of breast-feeding. These feelings are more common in lower social groups. Research on feelings and attitudes toward breast-feeding can be of considerable help in dealing with these issues, according to Lawrence (4).

Nutritional

Human milk is ideally suited to the human infant and is currently being recommended as the best source of nourishment for the first six months of life (23). Many proprietary formulas are now on the market, and although they are designed to simulate breast milk, they are still not its equal (8).

Digestibility

Breast milk is better digested and absorbed than formula. The stools of the breast-fed infant are sweet smelling, reflecting the lack of undigested protein and fat which are present in the stools of formula-fed infants. Constipation may be a frequent occurrence in infants taking formula (8).

Economic Benefits

Nursing women do not need to eat expensive foods to produce adequate milk supplies (7). McKigney (65) reported that in situations where all food is purchased, artificial feeding will probably cost more than lactation. Jelliffe and Jelliffe (24) stated that breast-feeding conserves resources in ingredients for formulas and energy consumed in production, delivery and manufacture. Cost of extra maternal calories needed is usually far less than cost of artificial formula and feeding accessories. Hypoallergenic formulas make the cost of artificial feeding even greater (4). Since breast-fed babies are not as prone to as many infections as bottle-fed infants, medical care costs may also be reduced (7).

Convenience

The benefit of convenience is often not considered in the decision about infant feeding. Human milk is available at the correct temperature. Nursing mothers do not have to spend time preparing formulas, washing and sterilizing equipment and reheating bottles (28).

Health Benefits for the Infant

Breast-fed infants have lower rates of infection than bottle-fed babies because of the numerous defense mechanisms provided by breast milk (7). Allergic conditions are also less common in breast-fed infants (3,22).

Time Management of Breast-feeding

The free, independent lifestyle of many women may cause them to have second thoughts about breast-feeding. A woman may be

overwhelmed by the idea of being committed to her breast-feeding infant for six to twelve feedings a day for several months (4)

Breast-Feeding and the Working Mother. Tremendous commitment is required on the part of a woman to work and breast-feed, but it can be done (4,8). A woman who is able to take six months maternity leave can return to work at the time her infant is beginning to learn to drink from a cup and to eat solid foods. If she must return to work earlier, she will need to use formula supplements or exppressed breast milk (8).

Some infants adjust to the mother's schedule by breast-feeding frequently through the night and sleeping through the day. A mother who works long or inflexible hours may need to wean the infant to only nursing at night. Some mothers can nurse for months while working but others find their milk supply dwindles as the baby begins to prefer the bottle. A woman who chooses to express or pump milk for the next day's feedings will find that much time and effort are involved (8).

Physiology of Lactation

Anatomy of the Breasts

Knowledge of breast structure is necessary for understanding the process of lactation and the problems associated with breast-feeding (7). The human breast is composed of about eighteen segments which are embedded in fat and connective tissue. Each segment is made up of thousands of milk-secreting alveoli which drain into ducts, lactiferous sinuses and the ampulla opening into the nipple (5). The alveoli are surrounded by myoepithelial cells which contract under stimulation by hormones to squeeze milk through the ducts and into the nipple (28).

The pressure on the areola from the infant's mouth forces milk that has collected in the sinuses through the openings. The areola contains glands which secrete a lubricating substance during lactation (4).

Hormonal Influences

During pregnancy proliferation of the ducts and lobules occurs because of interaction of the growth hormone with estrogen, progesterone and human placental lactogen. As the alveoli develop more fully later in pregnancy, colostrum is secreted. The secretion of colostrum occurs at only one percent of the rate for normal milk production because prolactin, the hormone that stimulates milk production is suppressed by high levels of the other hormones (7).

At birth the inhibiting effects of estrogen and progesterone are removed with expulsion of the placenta. Prolactin causes cells to synthesize protein, fat and lactose for milk production. Prolactin levels are maintained by the neurohormonal response to suckling (4). Another hormone, oxytocin, stimulates myoepithelial cells to force fat globules out of secretory cells into the watery milk which collects in the lactiferous sinuses between feedings (7).

Let-Down Reflex

The single most important function affecting successful breast-feeding is the let-down reflex. When the nipple is stimulated, impulses are transmitted to the hypothalmus. The hypothalmus stimulates the pituitary gland to secrete prolactin which, in turn, stimulates the alveoli to secrete milk (4). Shortly after nursing begins, the mother may feel the let-down reflex in her breasts that accompanies let-down.

If let-down is inhibited, the infant only gets milk that has collected in the ducts and drained toward the nipple because there is no myoepithelial contraction (7).

Oxytocin

Oxytocin release is controlled by the hypothalmus and, therefore, has a strong psychological base. Stress, tension, embarrassment or pain may all inhibit oxytocin release and let-down. Efforts should be made to provide a nursing mother with quiet, unstressful surroundings and supportive people as she begins to breast-feed (28,66,68,70).

Oxytocin nasal spray may be used in cases with impaired let-down. It is destroyed in the gastrointestinal tract so it must be sprayed nasally. Oxytocin is rapidly absorbed, and one spray two to three minutes before nursing is usually sufficient (4)

Factors Affecting Human Milk Quality

Medications

Most medications and drugs are excreted into breast milk in varying degrees (5). Factors that influence passage of drugs into the milk include size, solubility, binding capacity to protein, pH and diffusion rates of the molecules (4). There seems to be a marked difference between prolonged drug dosage for chronic illnesses and acute illnesses requiring drugs for only a short period (5).

Drugs for lactating women need to be considered in relation to dosage, duration of use and known toxicity (71). Drugs and medications should be avoided during lactation unless clearly and specifically incidated (5).

Oral contraceptives. Some oral contraceptives have been shown to interfere with volume and composition of milk (24,71). Combinations of estrogen and progesterone have been found to significantly decrease milk supply and retard infant growth (72). Many physicians recommend methods of contraception other than oral contraceptives during lactation (5,8).

Nicotine

Nicotine is transmitted through human milk. Smoking one pack of cigarettes per day has been reported as contradictory to breast-feeding (7). Arena (71) reported that breast-fed infants of women who smoked ten to twenty cigarettes a day would have the equivalent of 6-7.5 mg nicotine in their blood. In adults, 40-60 mg is considered a lethal dose while 4 mg has produced symptoms (71).

Alcohol

Ethanol in large doses appears to inhibit the let-down reflex by interfering with oxytocin release (5). Lawrence (4) reported that judicious use of alcohol helps to facilitate the let-down reflex by relaxing the mother. Owen (74) stated that any level of alcohol in human milk is unacceptable. He reported that blood levels of alcohol in a nursing infant's blood closely parallels that in the mother's system, and that gastrointestinal problems and central nervous system excitability may occur in the infant.

Marijuana

The mother who smokes marijuana while breast-feeding creates a hazard for the infant who not only receives the drug through her milk,

but also inhales it from the environment. Impairment of DNA and RNA formation has been reported in cells of new-born animals nursed by mothers whose milk contained cannabis (4).

Heroin

Heroin addiction is a contraindication to breast-feeding (7). Babies born to addicts suffer withdrawal symptoms with uncoordinated and ineffective suckling reflexes (73).

Environmental Contaminants

Human milk has been found to contain pesticides and pollutants. These compounds appear in breast milk because they are deposited in body stores of lipids and move with the lipids (4). Compounds such as DDT, PCB (polychlorinated biphenyl) and PBB (polybrominated biphenyl) have been identified in human milk (7). At present, authorities conclude that benefits of breast-feeding outweigh risks of possible contamination (7).

Foods

Some infants do not tolerate certain foods in the mother's diet. Garlic, onion, cabbage, turnips, broccoli, beans, rhubarb, apricots and prunes have been reported to cause colic while melons, peaches and other fresh fruits may cause diarrhea (4). Chocolate has been found to cause vomiting and colic in some instances (5).

Caffeine

Wakeful, hyperactive infants have been reported to be victims of caffeine stimulation. An infant whose mother drinks six to eight cups of any caffeine-containing beverage could show symptoms of being

wide awake, alert and never sleeping for long. Infants with these symptoms were found to settle down to more normal sleeping patterns when these drinks were discontinued (4).

Preparation for Breast-Feeding

Stone and Dickey (72) advocated that physicians prepare women for breast-feeding before birth of their infants. Breast examination should include a check for cysts and lumps that might need treatment, according to Lawrence (4). A woman might express the feeling that because her breasts are small she will not be able to nurse. She should be given encouragement and told that the size of her breasts is due to deposition of fat and has no relationship to her ability to nurse (4).

Breast texture should be assessed by palpation to determine elasticity. Inelastic breasts are more prone to engorgement and usually improve with massage during the prenatal period (4).

Before delivery nipples should be examined for protactility. If nipples are flat or inverted, treatment should be prescribed before delivery rather than waiting until the infant is frustrated and breasts engorged (4). Flat nipples are anchored to underlying tissue. Nipple rolling and stretching can help to break adhesions at the nipple base to make nipples more protractile (7). Inverted nipples may require the use of nipple shields which are worn before the baby comes. The rubber tip of the shield should be removed, leaving only the plastic base. These are worn inside a well-fitting brassiere. The constant, even pressure of the shields will cause the nipples to evert through the holes (4).

Other preparation of nipples will help to ensure successful

breast-feeding. Nipples should be washed with water without soap to prevent drying. Buffing with a soft towel is also recommended (4). Avoidence of drying agents is recommended because this destroys the lubricating secretion of the Montgomery glands and can cause cracking (7). Some physicians recommend exposure of the nipples to sunshine before delivery. Lanolin or A&D ointment applied twice daily, along with gentle traction on the nipple to the point of discomfort, can help prepare the nipples for the vigorous sucking of an infant (4).

The physician may provide literature or suggest sources for reading materials on breast-feeding. Open discussion of questions by the physician from his patient will help in promoting a successful breast-feeding experience (4).

Management of Breast-Feeding

Feeding Techniques

The mother may either lie on her side or sit upright for breast-feeding. She initiates the feeding by placing the nipple and areola in the infant's mouth or touching his cheek with the nipple to stimulate the infant's rooting reflex. As the infant begins to nurse, his jaws squeeze the areola which forces the accumulated milk out of the lactiferous sinuses and stimulates the neurohormonal let-down reflex (7,28).

When the infant has nursed for about ten minutes, the mother should place her little finger in the corner of the infant's mouth. This breaks the suction and prevents nipple damage. The infant should then be switched to the second breast to continue nursing. The next

feeding should be started on the second breast to insure maximum emptying (7,28).

Demand Feeding

Jelliffe and Jelliffe (5) reported that a demand feeding schedule promotes the successful establishment of lactation. Breast-feeding on demand encourages maximum emptying of the breasts by stimulating prolactin release and facilitating increased capillary circulation in the glandular tissue which decreases resistance from milk pressure in the ducts (7). Complete drainage of the breasts enhances milk production since mammary function is dependent on blood flow to the glandular cells (28). The amount of prolactin secreted, and hence the milk produced, is related to the frequency, intensity and duration with which they baby nurses (5).

Supplementary Bottles

Physicians often prescribe supplementary bottles or suggest that they be used at any time with breast-fed infants (4). Lawrence (4) reported that when lactation is going well a bottle is not needed, and when it is not going well, a bottle may aggravate the problem. A substitute bottle may confuse a newborn who may have trouble nursing at first. If infants are given bottles between breast-feedings, they may not be hungry when it is time to feed and do not nurse very long (4,8). This often results in decreased milk production which may lead to the end of lactation (4).

When a mother must be away from her infant at feeding time, a supplementary bottle of either expressed milk or formula should be used.

Lawrence (4) suggested using powdered formula to decrease expense and waste if a mother does not want to express her own milk.

The sucking action of the infant is different for the breast and a rubber nipple (4). The infant suckles the breast by clamping his lips at the junction of the nipple and areola to hold them in place as the tongue thrusts forward. The cheek muscles contract and the nipple is brought against the hard palate resulting in negative pressure. The gums compress the areola squeezing milk into the back of the throat. Milk flows against the hard palate from the high pressure system of the breast to the area of negative pressure in the back of the infant's throat (4,7,28).

The rubber nipple, however, strikes the soft palate and the tongue moves forward against the gum to control the overflow of milk from the bottle. The cheeks are relaxed. Some infants, accustomed to breast-feeding, gag when they are given a rubber nipple on a bottle. Infants using the same tongue action for a rubber nipple on the breast will often push the areola out of the mouth (4,7).

Duration of Breast-Feeding

Cole (19) reported that early introduction of solids is associated with premature weaning. Introduction of solids at an early age leads to a less frequent and less vigorous sucking stimulus, and the neurohormonal response for milk production is decreased (7).

At about six months of age, the infant may need supplemental foods and to learn different eating techniques such as chewing solid food and drinking from a cup. Breast milk can still be considered an

important part of the older infant's diet (7). Jelliffe and Jelliffe (5) reported that in many cultures breast-feeding until two or three years of age is common.

Gradual weaning is suggested to minimize the discomfort of both mother and infant. One daily feeding may be eliminated each week with substitution of a bottle or cup. Milk production will decrease gradually as demand is decreased and the woman should experience little discomfort from milk pressure in the breasts (7,28).

Problems Encountered with Breast-Feeding

Maternal

Inhibition of let-down reflex. Unsuccessful nursing can be caused by tension, anxiety or fatigue in the mother which interferes with oxytocin release and the let-down reflex (7). When the let-down reflex is inhibited, the result is a hungry, dissatisfied baby who has received only small amounts of relatively low-fat milk from the terminal lacteals (5). A cycle of increasing stress can be established because the nursing baby is frustrated in each attempt to nurse (7).

The most common cause for failure of the ejection reflex is psychological inhibition (4). The source of stress may be the husband who disapproves of breast-feeding. A frequent source of stress is the mother's belief that her milk supply is inadequate. This fear may inhibit the let-down reflex which results in decreased milk flow (7,28).

Breast-feeding should be undertaken in a calm, restful environment. Support and help from medical personnel, family and friends are essential during times of tension to prevent lactation

failure (7). The physician may prescribe oxytocin spray to facilitate lactation (4,5,7,8).

Inadequate milk supply. An inadequate milk supply is most often caused by too few nursings. An average number of feedings during the first month is ten times per day, with both breasts offered at each feeding. Mothers following a structured feeding schedule may not allow their infants enough feeding times. Increasing the number of feedings will stimulate milk production (8).

Fatigue is a common cause of inadequate milk supply. The demands of the infant; the pressures of cooking meals, cleaning house and caring for other children; or the demands of a job, career or social commitments may be causes of fatigue. The mother should be placed on a strict regime of rest since fatigue is devastating to milk production (4).

Engorgement . Incomplete milk drainage can decrease milk yield by impeding the flow of blood to mammary tissue. Resistance to myoepithelial cell contraction increases and the efficiency of milk ejection is compromised as the pressure from residual milk rises. Engorgement, the increasing pressure of milk in the breasts, can result in a variety of lactation problems (4,5,7,8,28).

When the areola is engorged it obliterates the nipple and makes grasping the areola properly impossible. The baby's attempts at nursing resemble chewing motions which cause painful damage to the nipple and decrease nursing time. The let-down reflex may be inhibited by the mother's anxiety and the infant's hunber (4,5,7,8,28).

Treatment recommended for engorgement includes hand expression

of milk to soften breasts, pain relief measures such as aspirin, ice or heat packs, frequent feedings and oxytocin spray to facilitate let-down (4,7).

Engorgement may be prevented by the mother's breast-feeding on demand and avoiding supplementary bottles. Scheduled feeding times may result in infants who cry with hunger between feedings and are too exhausted to nurse at the scheduled feeding times. Supplementary bottles often satisfy the infant's hunger so that he does not care to nurse (4,7).

Nipple problems. Sore nipples are the most common complaint of nursing women (8). The physician should examine the nipples before delivery for protactility and prescribe specific treatment to correct any problems (7). Some soreness is normal during the first few minutes of breast-feeding before let-down occurs. In cases of great discomfort, the mother should initiate the let-down reflex by breast massage before allowing the baby to nurse (8).

Sore nipples often represent true damage to the nipple and areola, and may be caused by incorrect technique. Nursing too long initially, incorrect positioning of the areola in the infant's mouth, improper care of the nipples and nursing without prompt let-down are all possible causes of nipple soreness (8).

Mastitis. Mastitis is an infection in the breast which results in fever, engorgement, of the affected breast, and occasionally nausea and vomiting (7). Lawrence (4) reported a successful program of management for mastitis which includes continuing to nurse on the affected breast. Goldfarb and Tibbets (8) reported that breast abscess is more common following sudden weaning with mastitis.

Infant

Newborn who will not nurse. The infant who is sleepy from labor and delivery medications often will not nurse. As the medications are metabolized, the infant will become more alert and nurse better (8).

Temporary inability to breast-feed may occur as a result of prematurity, low birth weight, severe jaundice, septecemia, cerebral birth injury, cleft lip and/or palate and absence of the swallowing reflex. If the mother wishes to nurse, expressed breast milk can be used at first and nursing started later (5).

Ineffective nursing. Some infants suck their own tongues and need to learn to suck properly by sucking a Nuk exercisor between feedings (8). An infant with a fluttering tongue may have problems nursing becuase there is poor stimulation of the ejection reflex (4).

The infant who cannot coordinate sucking and swallowing may choke. When ejection is very strong, the first rush of milk may cause choking. Stopping nursing and starting again will usually solve this problem (4).

The infant who has a receding jaw may have problems keeping the nipple in place. Gentle support at the angle of the jaw will help to alleviate this problem (4).

Complications and Breast-Feeding

Maternal

Cesarean section. Cesarean section is not a contraindication to breast-feeding (4,5,7,8). The primary obstacles to breast-feeding following Cesarean section are the mother's discomfort and difficulty in movement. She should be given specific instructions on positioning

the baby and avoiding the incision. Often the nursing mother will find that lying on her side is the most comfortable position. She should be helped to turn over when it is time for the infant to nurse on the second breast (8).

Diabetes. Diabetes does not preclude breast-feeding (4). Breast-feeding actually has many advantages for the diabetic mother. Some diabetics have a partial or complete remission of diabetes which may last through lactation or for several years. The remission has been attributed to hormone interaction. Transient ammenorhea, associated with breast-feeding, helps to preserve iron stores (4).

Special care must be taken with lactating diabetic women because infection is more prevalent with diabetes. Mastitis and other breast infections can present special problems (4).

Careful observation of blood sugar levels and anticipatory guidance should be used with the lactating diabetic patient. Additional calories will be required in the mother's diet. Lactation can be adequately maintained without hypoglycemia or hyperglycemia (4).

Severe illness. Jelliffe and Jelliffe (5) reported that severe illness, such as congestive heart failure, eclampsia or typhoid fever, may be contraindications to breast-feeding. Mothers with active hepatitis and hepatitis carriers should be advised not to nurse (8).

There is some controversy about the management of tuberculosis during pregnancy and lactation. Jelliffe and Jelliffe (52) contend that maternal pulmonary tuberculosis is not a contraindication to breast-feeding in technically underdeveloped countries. Active treatment is indicated for the mother, along with prophylactic

treatment of the baby. The risk of drug-related toxicity for the infant is far outweighed by the benefit of breast-feeding.

Lawrence (4) reported that maternal and infant contact can be permitted when maternal pulmonary tuberculosis has been treated for at least a week, if compliance with maternal therapy is assured, and the infant is receiving isoniazid prophylaxis. Since both mother and infant will be taking isoniazid, dosages will need to be monitored closely since the drug does pass into the milk.

Goldfarb and Tibbets (8) reported that a mother with fever who wants to nurse and feels well enough to nurse should be allowed to do so if she is not contagious, as in the cases of untreated tuberculosis and whooping cough.

Psychological problems. Severe psychological problems may hinder a woman from breast-feeding or even caring for her infant. Women who are severely retarded may require help in caring for their infants and nursing will most probably be very difficult or even impossible (8).

Very young mothers. A thirteen or fourteen year old mother needs considerable help in caring for a newborn and may also need to return to school. Bottle-feeding would insure that caring for the infant would be a shared responsibility (8).

Infant

Pre-term infants. There is controversy regarding breast-feeding of pre-term infants, those less than thirty-eight weeks gestational age (7,8). Most authorities agree that the moderately premature infant grows as well on breast milk as on formula (76,77). Breast milk offers

advantages to premature infants through antimicrobial agents, low potential renal solute load, amino acid pattern and digestibility of fats (7).

Some studies (77,78) indicate that very premature infants require more protein, calcium and sodium than is available from human milk if they are to grow at a rate comparable to growth in utero. Pre-term infants of twenty-eight to thirty-two weeks gestational age, who were fed breast milk, were reported to have indadequate weight gain, skeletal mineralization and increase in length.

The growth rate of infants less than thirty-two weeks is complicated because there is no known optimal growth rate for these infants. Many neonatologists have tried to attain the same growth rate the infant would have experienced in utero (8).

Many premature infants are unable to nurse and milk must be expressed, collected, stored and sterilized before feeding. Anti-infective properties are significantly decreased by heating (79). Ideally, the pre-term infant should receive his own mother's fresh breast milk (8). If the milk must be stored, it should be frozen immediately and minimal heat treatment used to decrease the likelihood of reducing anti-infective properties (79).

The mother of a premature infant who wants to breast-feed will require special help and encouragement (8). The nutritional status of breast-fed, pre-term infants should be closely monitored (7).

Cleft lip and/or palate. Nursing is usually possible with cleft lip and/or palate although it requires much motivation on the part of the mother. Breast-feeding for the cleft lip and/or palate

infant is difficult and the suggestion to nurse should come from the mother, not an outsider. There are support groups that can provide help to mothers of these infants who desire to breast-feed (8).

Inborn errors of metabolism. Infants with inborn errors of metabolism, such as galactosemia, phenylketonuria and maple syrup urine disease, are not able to breast-feed since they require special formulas which eliminate particular substances (8).

Breast milk jaundice. Breast milk jaundice is associated with the presence of a hormone, 3α, 2β-pregnanediol, in the milk which competes for glucuronyl transferase in the infant's liver and prevents bilirubin conjugation (52). If bilirubin leveks reach 15 mg/100 ml, discontinuance of breast-feeding for forth-eight hours is indicated (5). The condition usually corrects itself and is not a contraindication to breast-feeding (7).

Down's syndrome. Breast-feeding for women of Down's syndrome infants is advisable and specifically beneficial for the infant, according to Goldfarb and Tibbets (8). Down's syndrome infants can learn to nurse but a great deal of patience is required. Down's infants are placid and have poor muscle tone. Down's infants are difficult to rouse, and different arousal techniques should be tried before the infant begins to nurse. As in the case of cleft lip and/or palate, special support groups for Down's syndrome infants are available for mothers of these infants desiring to breast-feed (8).

Failure-to-thrive. The causes of true failure-to-thrive may be associated with problems of the infant, such as congenital heart disease, renal disease, infection, neurological disease, and metabolic or endocrine abnormalaties (8).

If the problem is determined to be an inadequate milk supply, the mother can be helped to improve her supply of milk. Close support and encouragement by the health professional is vital. The woman must understand that milk supply is increased by the frequency and duration of nursing. Without adequate stimulation of the breasts, none of the remedies such as good nutrition, large intake of fluids or rest will result in increased milk supply (8).

Goldfarb and Tibbets (8) suggested that the best way to ensure more frequent nursing is for the mother and baby to get into bed together and stay for several days. The most should be encouraged to pamper herself, read, eat, drink, relax and nurse. If she is unable or unwilling to do this, she should be encouraged to make increased nursing her top priority.

Unless there is real concern about hydration, supplements should be avoided. If supplements are added, they should be given after nursing and not as frequently as nursing. Supplements should be eliminated one at a time as the milk supply increases (8).

Failure-to-thrive due to inadequate milk supply can often be prevented by educating women about breast-feeding. Failure-to-thrive is rarely seen in infants whose mothers have a basic understanding of breast-feeding, who nurse on demand and who are enjoying the experience (8).

Attitudes of Women Concerning Breast-Feeding

Prenatal concerns about breast-feeding are usually related to the mother, not the infant. According to Lawrence (4) some of the concerns expressed most often by women include the following: effects

of breast-feeding on a woman's figure, effects on her freedom, and concern about exposing the breasts in public.

Bacon and Wylie (80) reported in their study that embarrassment was the most commonly named reason for their subjects to stop breast-feeding. Lower socio-economic classes expressed more modesty and shame about breast-feeding than higher classes.

Brack (6) reported that in western cultures breasts have primarily a sexual connotation rather than one of nurture. Lawrence (4) stated that the biggest deterrent to breast-feeding relates to feelings of shame about the practice. The health professional can play a vital role in helping women to counteract these personal and cultural influences.

Breast-feeding is a learned, not an instinctual behavior (81). It is a biological function, but the pattern through which it is learned is social in origin (6). Social and cultural influences seem to greatly influence a woman's choice to breast-feed (82).

Successful nursing depends on the association of mother and infant with adequate support from the father and available medical resources. Establishing a sense of confidence in the mother and supporting her with simple answers to questions when they arise is the key to management of the nursing couple (4). The decision to breast-feed should be made by the pregnant woman and her husband, with help from the physician (72).

During the prenatal period, a mother usually becomes interested in how she is going to feed her baby (4). However, a study by Sacks et al. (83) reported that most mothers surveyed said they had made a

decision about how to feed their infants before they got pregnant. The study suggested that information and encouragement be given early in life, perhaps to school-age girls. Stone and Dickey (72) suggested that boys might even be included in early education about breast-feeding becuase of the influence that husbands have on their wives regarding breast-feeding success.

Negative values of breast-feeding seem to be deeply rooted in our culture (4). A study by Newton and Newton (84) reported that patients who were positive about breast-feeding had a 74 percent success rate, those who were ambivalent, 35 percent success rate, and those who were negative, 26 percent under the same hospital management. Breast-feeding must be learned in a supportive, interactive system. In societies where it is accepted that all women will breast-feed, all do. No one seems to be concerned about whether or not a woman can nurse (6).

Medical Recommendations and Practices

Physicians

Gerrard (85) reported that many physicians have taken a permissive attitude toward breast-feeding because of the idea that the only function of breast-feeding is nourishment. Bottle-feeding has often been promoted as an equal of breast-feeding (4,5,85).

Weichert (81) stated that current medical practice follows the policy of asking a patient how she would like to feed her baby, and then allowing her to decide without presenting any facts. Brack (6) reported that many women have never been exposed to breast-feeding and, therefore, only a few choose to breast-feed. Weichert (8) felt that

because the idea of breast-feeding may cause anxieties for a patient, many physicians back away from discussing and promoting breast-feeding. The necessity of physicians giving factual support to women who express anxieties about breast-feeding was stressed.

In past eras, it was not necessary for physicians to provide instructions to mothers about breast-feeding since their own mothers were able to impart this information. Today this is not true, and physicians have become the primary source of information regarding breast-feeding (86). A study completed in the Vancouver City Health Department by Schwartz and Barr (87) reported that in women surveyed, the physician was considered to be the foremost authority on health matters, including nutrition. Patients responded that physicians were the most helpful source of nutrition information during pregnancy (62.2 percent) and the primary source of information on infant feeding (59.3 percent). The authors suggested that it is vital for physicians to recognize the trust which patients place in their advice.

In the United States, obstetricians bear the major responsibility for delivering prenatal care, for establishing medical standards for maternity services, and for providing information to the public on pregnancy and childbirth. They are responsible for supervising and monitoring labor and delivery services. Attitudes and practices of obstetricians influence the mother throughout her pregnancy, labor and delivery, and have a marked influence on her initial feeding choices (15).

In a small study conducted by Brack (6), breast-feeding was found to occur more often if the following were true:

1. Physicians had positive attitudes regarding breast-feeding and offered factual information.
2. Nurses supported breast-feeding and encouraged mothers.
3. Mothers were exposed to other women who had successfully breast-fed.
4. Husbands had positive attitudes about breast-feeding.
5. Mothers had positive attitudes about breast-feeding.

Brack (6) reported in this study that many women had never seen a baby nursing and some felt breast-feeding was repulsive. Some women also reported that physicians discouraged them from breast-feeding with such statements as "What are you trying to prove?", "Well, aren't we the little earth mother?", and "My God, Alberta, at 30?"

Hazlet (88) stated that physicians often ignore the subject of breast-feeding because it is touchy. "To discuss breast-feeding is embarrassing while to actually breast-feed is to invite ridicule," is the case in many instances, according to Hazlet.

Woody (86) reported that physicians, even if they endorse breast-feeding, often are not sure of the exact information needed to deal with particular problems. Their lack of experience may lead them to prescribe infant formula rather than breast milk. Woody felt that discussion of breast-feeding should ideally take place both before and after the baby's birth, in several question and answer periods. He stated that anticipatory guidance is effective because in predicting events, the mystery is removed, mothers learn what to expect, and fears are quelled. The woman receives answers from her physician in this manner and learns that her physician can guide her through the process of breast-feeding.

Langham (13) reported that 70 percent of physicians surveyed in Louisiana in 1971 recommended breast-feeding. She reported that physicians commented they did not have much success in getting mothers to breast-feed and that they seldom saw breast-fed infants. She reported that one physician was being very truthful, and suggested that he may have been expressing the action of others when he said, "I don't really encourage it but I do believe in it."

A female obstetrician (66) reported that breast-feeding rates at the hospital in which she practiced were raised from 33 percent to 65 percent, and at five months postpartum from 15 percent to 52 percent in two years. This physician had initiated a program to encourage breast-feeding which consisted of inviting pregnant women and mothers into her home for coffee and a discussion of baby care. Each pregnant woman was paired with a more experienced mother who could be called for advice on baby care, including breast-feeding.

An Oxford physician (89) collected data on breast-feeding patients and found that more mothers were still breast-feeding at six months postpartum when they were followed through obstetric care, delivery and early puerperium by the same staff (physician, health visitor and midwife). He suggested that in having different staff members in each phase of care, as is common in some hospital and clinic situations, a different emphasis may be placed on particular aspects of infant feeding, thus leading to confusion of the mother.

Lawrence (4) reported findings from a study at the University of Rochester which showed the importance of the obstetrician or provider of prenatal care in a mother's decision about how to feed her infant.

Findings also showed the need to involve both husband and wife in the feeding decision. Results indicated the necessity for the physician to initiate a discussion about feeding because in most cases in which there was no discussion about a feeding method with the physician, the mother chose bottle-feeding.

The study by Lawrence (4) also showed a direct correlation between the method with which a physician's child was fed and the way he counseled patients about feeding. Lawrence stated that nowhere else does personal experience influence medical management so greatly as in the areas of childbirth and breast-feeding.

Cole's (19) study of breast-feeding mothers in Boston reported that the three most frequently named reasons for discontinuing breast-feeding were insufficient milk, fatigue, and physicians advice to discontinue breast-feeding. A study in South Wales by Davies and Evans (90) showed that mothers most commonly stopped breast-feeding when they thought they were not providing enough milk and were told by physicians to complement breast milk with formula. Kemberling (91) listed the following causes of breast-feeding failure: unsupportive husbands, physical factors (engorgement, fatigue), and insufficient milk. A physician with the correct knowledge can help a mother through a crisis which could cause her to discontinue breast-feeding.

A survey by Hollen (92) of obstetricians and pediatricians in California showed that physicians were aware of the advantages of breast-feeding but made no effort to convince mothers of its importance and gave no encouragement to them to try breast-feeding. Many even tried to discourage mothers from breast-feeding for reasons which are

not usually considered to be contraindications. Hollen reported that many physicians recommended bottle-feeding at the first sign of difficulty of breast-feeding. In general, pediatricians appeared more knowledgeable about and interested in breast-feeding than obstetricians. Findings indicated a lack of breast-feeding success in female physicians and wives of physicians who had tried to breast-feed. Also more than half of the responding physicians had never seen anyone nurse a child until they either had a child of their own or began practicing medicine. Most reported they had received little information about breast-feeding in medical school.

Hospitals

Current medical and hospital practices have been reported to be disruptive to breast-feeding (9,93). Brack (6) reported that primary problems, identified by interested physicians, nurses and laypersons as detrimental to breast-feeding, included the development of systems convenient for obstetricians and hospital personnel but not responsive to the emotional needs and well-being of mothers and infants.

The immediate postpartum period if crucial to the initiation of successful lactation. Failure to bring a new baby to his mother until sixteen hours following delivery is often the case in hospitals, according to Johnson (94). Johnson reported that at eight weeks postpartum, mothers who were allowed to nurse at one hour following delivery were much more likely to be nursing than those who had nursed at sixteen hours following delivery, which was standard practice at the institution studied.

Salariya et al. (95) reported findings from their study which suggested that both early initiation and increased frequency of breast-feeding extended the nursing period, with early initiation having the greatest effect. Lozeff (93) stated that immediate postpartal nursing seems to be less important for effective breast-feeding than when the mother and infant stay together early during infancy, nursing is on demand, and people support the nursing couple.

Lawrence (4) reported that infants in some countries go directly to the breast after delivery. This has physiological effects on the uterus causing it to contract. Since aspiration of cow milk formula is irritating, delay of first feedings in the United States is the rule. Colostrum, however, is readily absorbed and non-irritating (4).

Lawrence (4) suggested that nursing immediately following delivery can be accomplished. She advocated putting the new mother and her infant on a stretcher or bed wide enough for both, providing a tranquil atmosphere, and cover for the infant to prevent chilling. However, some opposition to breast-feeding in the delivery room has been reported by medical personnel (96).

Jackson et al. (97) studied weaning times of mothers participating in a rooming-in project as compared to mothers using traditional postpartal care at New Haven Hospital from 1942 - 1951. Mothers and infants were together in a special unit designed to accommodate both mothers and infants. Rooming-in mothers were found to nurse significantly longer, averaging 3.5 to 3.8 months as compared to controls who weaned at 1.8 to 2.5 months.

A study reported by Meyer (12) of selected hospitals in the United States found that only 36.8 percent of hospitals responding to a questionnaire reported that they had programs which could be said to encourage breast-feeding. Practices such as the use of intrapartum medications, delay nursing, separation of mothers and infants, providing supplementary bottles, enforcing four-hour feeding schedules, excluding fathers and giving little support to breast-feeding mothers often hinder successful breast-feeding (89).

Ladas (98) reported that the most common reasons given for stopping breast-feeding by surveyed LaLeche League members were instructions given by physicians, hospitals or both physicians and hospitals. Ladas suggested that information and training regarding breast-feeding be given to hospital staff and especially to administrators who make hospital policy. Davies and Thomas (99) reported that fourteen of thirty-two women surveyed were told by physicians to supplement breast-feeding with complementary bottles and all stopped breast-feeding within two weeks.

Supportive nursing care is vital for a mother to establish successful breast-feeding (31). Smart and Bamford (100) studied differences in breast-feeding rates in a large hospital and found they differed greatly between wards. The most likely factor of difference was thought to be the influence of the nursing staff on the wards.

Modern hospitals are usually full of activity and may not provide an atmosphere conducive to rest. New mothers need much rest, especially if they are breast-feeding. In primitive cultures, mothers are groomed, fed and protected after delivery for weeks (4).

Hospital routines often follow a four-hour feeding schedule for infants which is conducive to bottle but not breast-feeding. Infants often need to nurse more often than every four hours, and stimulation by the infant is needed to promote milk production (93). Many physicians allow infants to have water at 2 a.m. feedings until the milk comes in, but Lawrence (4) suggested that mothers be allowed to nurse their infants on request.

Increasing the Promotion of Breast-Feeding by Medical Personnel

A statement from the American Academy of Pediatrics (8) in support of breast-feeding recommended that better education about breast-feeding be provided in the curricula of physicians and nurses. The statement also recommended that prenatal patients should receive instruction on both the theoretical and practical aspects of breast-feeding. Another recommendation was that prenatal clinics and maternity wards should provide a climate favorable to breast-feeding, as well as staff members who are knowledgeable about breast-feeding and who have had successful breast-feeding experiences themselves.

Physicians

One pediatrician stated that breast-feeding should have a more prominent place in the curricula of most medical schools. He contended that if breast-feeding is ignored by physicians, then others will tend to regard it as unimportant (101).

Physicians who were enthusiastic about breast-feeding have been shown to favorably influence the number of breast-feeding mothers in their practices (4). Winkoff (15) reported that good pediatric

guidance is essential if breast-feeding is to be sustained. However, if a mother is not convinced of the superiority of breast-feeding, she may not even try it. By the time a pediatrician sees a mother it may be too late to provide information and encouragement that could enhance the chances for successful breast-feeding. Winkoff felt that obstetricians have the greatest potential for increasing prevalence and duration of breast-feeding.

A study by Coles et al. (102) reported that the rate of mothers breast-feeding at two months was independent of those breast-feeding at discharge from hospitals. Their data suggested that efforts to increase numbers of breast-feeding infants would be most productive if directed toward antenatal education of mothers by physicians.

Many women interested in breast-feeding seek help from, or are referred by physicians to, organizations such as LaLeche League for help in practical problems encountered with breast-feeding (103). Ladas (98) reported that women who attended LaLeche League classes profited by receiving accurate, current and relevant information.

Hospitals

Wood (104) reported that promoting breast-feeding among relevant health personnel seems to be the first step in creating an atmosphere conducive to successful lactation. This study found that information and education programs aimed at hospital staff were often as effective in increasing breast-feeding rates as direct education of new patients.

Several studies have reported that small-scale hospital programs of educating staff and making simple no-cost modifications of

prenatal and postpartal care can do much to promote breast-feeding (24,105,106,107). The key to successful lactation is confidence. The environment must be supportive, with medical personnel providing current, practical information (108).

Summary

Breast-feeding has been recommended as the desirable way to feed infants, but many women still continue to choose bottle-feeding for their infants (4,5,7,8). Changes in social values have played a major role in the decline in popularity of breast-feeding, with many mothers choosing to bottle-feed because of a desire to be modern, the status associated with bottle-feeding and the influence of advertising (7). Society has accepted these changes and medical practice has become oriented to the bottle-fed rather than the breast-fed infant (10).

In the last few years breast-feeding has been increasing, especially among women with higher levels of education (14,19). Studies have reported that about 50 percent of women are now breast-feeding in hospitals but only a small percentage continues to breast-feed beyond the first few weeks postpartum (14,17).

Health professionals need to be more knowledgeable about the biological basis of breast-feeding and its practical management in order to provide support for women choosing to breast-feed (31). Hospital practices should be structured to provide an atmosphere which is conducive to breast-feeding. Physicians should take an active role in encouraging women to breast-feed and in providing them with theoretical and practical information about its management. The enthusiastic

support of physicians and hospital practices oriented to breast-feeding can greatly help women overcome obstacles to breast-feeding created by inexperience and cultural changes (4,5,7,8,91,92).

Chapter III

RESEARCH METHODOLOGY

Population Description and Sample Solution

Physicians. One part of the study was designed to determine the breast-feeding recommendations of Louisiana physicians. Since the primary groups of physicians involved in the care of mothers and infants are family practitioners, general practitioners, obstetricians/gynecologists (designated obstetricians for discussion) and pediatricians, these four groups were selected as the study population.

Stratified random sampling was used to obtain the sample. Separate alphabetized lists of physicians' names and addresses were purchased from the Louisiana State Medical Society which included the following: family practitioners - 414 names; general practitioners - 356 names; obstetricians - 427 names; and, pediatricians - 392 names.

The desired sample of one hundred names per category was achieved by choosing every fourth name in each category beginning with a name determined by a drawing of numbers. Each group of one hundred names was then transferred to separate physicians' mailing lists according to category.

Hospitals. The other part of the study was designed to determine the breast-feeding practices in Louisiana hospitals. The population included the names and addresses of Louisiana hospitals reporting infant births in 1980 obtained from Vital Statistics, Department of Health and Human Resources. A total of ninety-four

hospitals reporting birth rates of at least twenty-five births during the year were chosen for participation in the study.

Survey Instrument

Physicians. A three-page questionnaire (Appendix A) was developed to elicit information by mail from Louisiana physicians about their recommendations concerning breast-feeding. General areas of questioning included the physicians' knowledge of current breast-feeding information and recommendations, the physicians' own recommendations and certain demographic data.

Statements concerning physicians' recommendations were scored according to the Likert method of summation rating (109) which is a set of items to which subjects respond with degrees of agreement or disagreement. Statements for which the most desirable response was affirmative rated: Strongly agree and always recommend - 5; agree and usually recommend - 4; undecided and occasionally recommend - 3; disagree and seldom recommend - 2; and, strongly disagree and never recommend - 1. Those recommendations with a desired negative response were scored in the opposite manner.

Most of the statements were constructed in a check-list form for ease of completion and tabulation. Completion time for the questionnaire was estimated at approximately fifteen minutes. Respondents were assured anonymity.

The questionnaire was reviewed by the Nutrition Section Administrator and the Assistant Secretary of the Office of Health Services and Environmental Quality, Department of Health and Human Resources. The questionnaire was pretested by mail using a random

sample of twenty-four Louisiana physicians, six in each category of family practitioners, general practitioners, obstetricians and pediatricians. Responses were received from four family practitioners, three general practitioners, four obstetricians and five pediatricians. No changes were made in the questionnaire following the pretest.

Hospitals. A one-page questionnaire (Appendix B) was developed to obtain information by mail about breast-feeding practices and policies in Louisiana hospitals providing maternity services. Most of the statements were constructed in a check-list form for ease of completion and tabulation.

Statements concerning breast-feeding practices in Louisiana hospitals were scored according to the Likert method of summation rating (109). Statements for which the most desirable response was affirmative rated: Always practice - 5; usually practice - 4; occasionally practice - 3; seldom practice - 2; and never practice - 1. Those with a desired negative response were scored in the opposite manner.

Completion time for the questionnaire was estimated at approximately fifteen minutes. Respondents were assured anonymity.

The questionnaire was reviewed by the Nutrition Section Administrator and the Assistant Secretary of the Office of Health Services and Environmental Quality, Department of Helath and Human Resources.

The questionnaire was pretested by mail using a random sample of three hospitals in Louisiana providing maternity services. Responses were received from the three hospitals sampled. No changes were made in the questionnaire following the pretest.

Data Collection

Physicians. The Assistant Secretary, Office of Health Services and Environmental Quality, Department of Health and Human Resources, was requested to write a letter (Appendix C) to the president of the Louisiana State Medical Society and to presidents of each local medical society telling them about the study and asking for cooperation from their members two months before the questionnaires were mailed.

Each questionnaire was numbered to correspond to the physician number on the mailing list. A letter printed on letterhead from the Office of Health Services and Environmental Quality, Department of Health and Human Resources (Appendix D), a numbered questionnaire and a stamped, self-addressed envelope were mailed to each physician. The letter explained the project and solicited cooperation; the envelope was provided for returning the completed form. At the bottom of each printed letter, the author wrote a personal, hand-written note to each physician asking for his assistance in completing the questionnaire.

The questionnaires were mailed on January 4, 1982 to four hundred physicians. If a physician had not replied in three weeks from that date, he was sent a second letter (Appendix E), along with another numbered copy of the questionnaire and a stamped, self-addressed envelope.

Hospitals. Each hospital questionnaire was numbered to correspond to the hospital number on the mailing list. A letter printed on letterhead from the Office of Health Services and Environmental Quality, Department of Health and Human Resources

(Appendix F), a numbered questionnaire and a stamped, self-addressed envelope were mailed to administrators of each of the ninety-four hospitals. The letter explained the project and solicited cooperation; the envelope was provided for returning the completed questionnaire. At the bottom of each printed letter, the author wrote a personal, hand-written note to each administrator asking for his cooperation in completing the questionnaire.

The questionnaires were mailed on January 4, 1982. If an administrator had not replied in three weeks from that date, he was sent a second letter (Appendix G), along with another numbered copy of the questionnaire and a stamped, self-addressed envelope.

Response

Physicians. A total of 298 questionnaires of 400 physicians (100 in each category of family practitioners, general practitioners, obstetricians and pediatricians) were returned within two months of the second mailing, giving an overall return rate of 75 percent. Of those returned, 274 questionnaires (69 percent) were usable. Responses were recieved by physician category as follows:

Family Practitioners - 73 returned questionnaires, 71 usable questionnaires (71 percent)

General Practitioners - 67 returned questionnaires, 46 usable questionnaires (46 percent)

Obstetricians - 70 returned questionnaires, 69 usable questionnaires (69 percent)

Pediatricians - 88 returned questionnaires, 88 usable questionnaires (88 percent)

Hospitals. A total of 83 questionnaires from 94 hospitals

surveyed were returned within two months of the second mailing, giving an 88 percent return rate. All returned questionnaires were usable.

Analysis of Data

Physicians. Data were handcoded and analyzed at the Louisiana State University Computer Center. Frequency data were presented for demographic information, physician's reasons for discouraging mothers from breast-feeding, discussion times of breast-feeding by physicians, physicians' recommended times of breast-feeding initiation and physicians' opinions as the adequacy of information received in medical school.

An analysis of variance using the F test was employed to determine significant differences in the physicians' recommendations as related to area of specialization, location of practice, year of medical school graduation and whether or not a physician's own children had been breast-fed.

Hospitals. Data were handcoded and analyzed at the Louisiana State University Computer Center. Frequency data were presented for demographic information and for the time of breast-feeding initiation practiced in Louisiana hospitals.

Because of the relatively small sample size, data were grouped in the following three categories for analysis: always/usually practice, occasionally practice and seldom/never practice. An analysis of variance using the F test was used to determine significant differences in the hospital practices as related to hospital size, number of breast-fed infants and number of live births. Chi square

analysis was used to determine significant differences in the practices by hospital location.

Chapter IV

RESULTS AND DISCUSSION

Demographic Data

Physicians. Most Louisiana physicians (62 percent) reported their place of practice as urban/surburban. A small town practice was specified by 32 percent of physicians while only 6 percent listed a rural practice.

Seventy-four percent of Louisiana physicians responding to the questionnaires reported they graduated from medical school prior to 1970; 26 percent reported that they graduated in 1970 or after 1970.

Most Louisiana physicians (60 percent) reported that at least one of their own children was breast-fed. Twenty-eight percent reported that none of their children were breast-fed, one percent reported lack of knowledge of how their children were fed and 11 percent reported having no children.

The breakdown of physicians' responses received by sex was 95 percent male and 8 percent female. Of the 22 responses received from female physicians, 14 listed pediatrician as their area of specialization.

Hospitals. The number of beds reported by Louisiana hospitals ranged from 21 beds to 1642 beds with a median of 115 beds. Of the 83 hospitals responding to the questionnaire, 82 were classified as general hospitals while only one was a maternity hospital.

Most hospitals (52 percent) reported being located in small towns. Thirty four percent reported urban/suburban locations and 14 percent reported rural locations. The hospitals reported the approximate number of live births occurring from January 1, 1981 to December 31, 1981 to range from 21 live births to 7,350 live births. The median was 446 live births.

Louisiana hospitals also reported the approximate number of breast-fed infants during hospital stay wihch ranged from 0 to 2084 breast-fed infants. The median was 137 breast-fed infants.

Data from the survey were analyzed and presented in terms of specific study objectives. Results are presented in the following sections.

Importance of Breast-Feeding

Table 1 presents frequency data and mean score information on the opinion of Louisiana physicians regarding the importance of breast-feeding to children in America today. As shown by frequency data, most Louisiana physicians considered breast-feeding to be very important (63 percent). Eighteen percent of physicians reported breast-feeding to be important and 16 percent reported it to be somewhat important. Only three percent reported breast-feeding to be unimportant. A greater percentage of family practitioners (65 percent), general practitioners (66 percent), and pediatricians (74 percent) reported that they considered breast-feeding to be very important than did obstetricians (44 percent).

The following scale for mean score information on the opinion of Louisiana physicians regarding the importance of breast-feeding,

TABLE 1

OPINION OF PHYSICIANS REGARDING THE IMPORTANCE OF BREAST-FEEDING BY SPECIALIZATION AREA, LOUISIANA, 1982

Opinions	Percent by Specialization Area					
	Family Practitioners (N=66)	General Practitioners (N=41)	Obstetricians (N=61)	Pediatricians (N=82)	Total (N=250)	Mean* Score
Very Important	65	66	44	74	63	3.30
Important	20	10	25	15	18	
Somewhat Important	14	15	26	10	16	
Unimportant	1	10	5	1	3	
Total	100	100	100	100	100	

*Mean score for total based on survey scores as follows: very important - 4, important - 3, somewhat important - 2, unimportant - 1.

presented in Table 1, was used to assign values to the different categories for discussion purposes:

Very Important: 3.26 - 4.00
Important: 2.52 - 3.25
Somewhat Important: 1.76 - 2.51
Not Important: 1.00 - 1.75

Most Louisiana physicians agreed that breast-feeding was very important for children in America today (mean - 3.30).

A highly significant difference ($P < 0.01$) was seen among specialization areas of physicians in regard to this statement, and this information is presented in Table 2. Pediatricians (mean - 3.85), family practitioners (mean - 3.44), and general practitioners (mean - 3.26) reported that they felt breast-feeding was very important while obstetricians (mean - 2.45) considered breast-feeding to be somewhat important.

No significant differences were noted in comparison of the statement regarding the importance of breast-feeding and the location of a physician's practice (Table 3) or the year of medical school graduation (Table 2). A highly significant difference ($P < 0.01$) was found in the relation of the statement with whether or not a physician's own infant had been breast-fed (Table 4). Physicians whose own infants were breast-fed reported that breast-feeding for children in America was very important (mean - 3.72) while those who did not have breast-fed children reported that breast-feeding was somewhat important (mean - 2.42).

TABLE 2

COMPARISON OF PHYSICIANS' OPINIONS REGARDING THE IMPORTANCE OF BREAST-FEEDING BY SPECIALTY AREA AND YEAR OF MEDICAL SCHOOL GRADUATION, LOUISIANA, 1982

Opinion	N	F Values			
		Specialization	d.f.	Year Med. School Grad.	d.f.
Importance of breast-feeding for well-being of infants in America today.	250	4.77**	(3,242)	0.87	(1,242)

**Significant at the 0.01 level of probability

TABLE 3

COMPARISON OF PHYSICIANS' OPINIONS REGARDING THE IMPORTANCE OF BREAST-FEEDING BY SPECIALTY AREA AND LOCATION OF PRACTICE, LOUISIANA, 1982

Opinion	N	F Values			
		Specialization	d.f.	Location	d.f.
Importance of breast-feeding for well-being of infants in America today.	248	4.99**	(3,239)	1.03	(2,239)

**Significant at the 0.01 level of probability.

TABLE 4

COMPARISON OF PHYSICIANS' OPINIONS REGARDING THE IMPORTANCE OF BREAST-FEEDING BY SPECIALTY AREA AND OWN INFANT BREAST-FED, LOUISIANA, 1982

Opinion	N	F Values			
		Specialization	d.f.	Own Infant Br-Fed	d.f.
Importance of breast-feeding for well-being of infants in America today.	218	3.21*	(3,210)	15.73**	(1,210)

*Significant at the 0.05 level of probability.
**Significant at the 0.01 level of probability.

Physicians' Opinions Regarding Current Breast-Feeding Recommendations

Mean score information is presented in Table 5 on the opinion of Louisiana physicians regarding current breast-feeding recommendations. For purposes of discussion, the following scale was used to assign values to the five different categories.

Strongly Agree: 4.21 - 5.00
Agree: 3.41 - 4.20
Undecided: 2.61 - 3.40
Disagree: 1.81 - 2.60
Strongly Disagree: 1.00 - 1.80

Most Louisiana physicians strongly agreed (mean - 4.59) with the statement that breast milk is the best form of nourishment for infants. However, most physicians disagreed (mean - 2.44) that most infants should receive only breast milk for the first six months of life. Breast-feeding is currently recommended by many authorities as

TABLE 5

OPINION OF PHYSICIANS REGARDING CURRENT BREAST-FEEDING RECOMMENDATIONS, LOUISIANA, 1982

Recommendations	N	Mean Scores
Breast milk is the best form of nourishment for infants.	273	4.59
Most infants should receive only breast milk for the first 6 months of life.	272	2.44
Most women should be encouraged by their physicians to breast-feed their infants.	270	4.31
Breast-fed infants are less likely to have serious respiratory infections than bottle-fed.	273	3.98
Breast-fed infants are less likely to have serious gastrointestinal infections than bottle-fed.	273	4.16
Breast-fed infants are less likely to have allergic conditions than bottle-fed.	272	4.19
An advantage of breast-feeding is that mothers do not know the amount of milk consumed.	260	2.75
Breast-feeding often develops a special bonding relationship between mother and infant not achieved with bottle-feeding.	272	4.19
Breast-feeding is more economical than bottle-feeding.	273	4.41
Breast-feeding is usually contraindicated with C-Section.	274	4.09
Breast-feeding is usually contraindicated with premature infants.	271	3.49
Bresat-feeding is usually contraindicated with maternal diabetes.	272	3.51
Breast-feeding is usually contraindicated if a woman plans to continue working away from home after baby's birth.	274	3.47

the desirable way to feed infants and the only source of nourishment needed by most infants for the first six months of life (4,5,7,8).

Physicians strongly agreed (mean - 4.31) that most women should be encouraged by their physicians to breast-feed. Studies have reported that more women will breast-feed if encouraged by their physicians and that the physician's support will help the breast-feeding experience to be more successful (4,15,66,86).

Most Louisiana physicians agreed with the statements which related health benefits for infants to breast-feeding. The physicians agreed that breast-fed infants were less likely to have serious respiratory illnesses (mean - 3.98), gastrointestinal infections (mean - 4.16), or allergic conditions (mean - 4.19) than bottle-fed infants. There is much evidence to give support to the idea that breast-feeding offers immunological protection to infants (4,5,7,8). Breast milk is also better tolerated by human infants than cow milk and thus the incidence of allergic reactions is reduced (3,4,5,7,45).

Physicians were undecided (mean - 2.75) about the statement that an advantage of breast-feeding is that mothers do not know the amount of milk consumed by their infants. Researchers have suggested that in not being aware of the amount of breast milk consumed as they are with bottle-feeding, mothers are not concerned with having the infant finish every last drop of milk which may thus contribute to over-feeding and perhaps problems of overweight (3).

Louisiana physicians agreed (mean - 4.19) that breast-feeding develops a special bonding relationship between mothers and infants not achieved with bottle-feeding. Some researchers have suggested that

breast-feeding offers an intimate experience to a mother and her infant which helps to develop a very special relationship between the two (7,68,69).

Most physicians strongly agreed (mean -4.41) that breast-feeding is more economical than breast-feeding. When human milk is not used to feed an infant, the next best alternative is a proprietary formula. The cost of the formula, along with bottles, bottle sterilization equipment and energy costs to prepare formula will be more expensive than the extra food needed by a mother to produce milk for her infant (4,7,65).

Louisiana physicians agreed (mean - 4.09) with the statement that breast-feeding is usually contraindicated with Cesarean section. Many researchers have reported that Cesarean section is not a contraindication to breast-feeding (4,5,7,8). Many Cesarean sections are now performed with the same anesthetic given to mothers having vaginal deliveries. In cases where medications are given which may affect the infant's reflexes, breast-feeding can be delayed until the medication's effects wear off (4,7,8). One researcher reported that the primary obstacles to breast-feeding following Cesarean section are the mother's discomfort and difficulty in movement (8).

Physicians agreed (mean - 3.49) that breast-feeding is usually contraindicated for premature infants. There is controversy regarding breast-feeding for pre-term infants less than 38 weeks but most authorities agree that the moderately premature infant grows as well on breast milk as on formula (76,77).

Louisiana physicians agreed (mean - 3.51) that breast-feeding is contraindicated with maternal diabetes. Researchers have reported

that diabetes does not preclude breast-feeding and that breast-feeding for the diabetic mother actually has many advantages. Some diabetic nursing mothers have a partial or complete remission of diabetes, attributed to hormone interaction, which may last through lactation or for several years. Iron stores are also preserved with the transient amenorrhea associated with breast-feeding. Additional calories will be required by the lactating diabetic mother and close observation of blood sugar levels, along with anticipatory guidance, should be followed (4).

Physicians agreed (mean - 3.47) that breast-feeding for working mothers is usually contraindicated. Researchers have reported that even if a woman is only able to breast-feed her infant for six weeks before returning to work, this is to the infant's advantage and worth the effort. A woman who is off work for longer than six weeks may continue to breast-feed her infant during her time at home and use formula or expressed milk when she is away from her baby (4,8).

Comparison of Current Breast-Feeding Recommendations by Physicians' Specializations

Analyses of variance of current breast-feeding recommendations and Louisiana physicians' opinions regarding these recommendations by physician specialization areas is presented in Tables 6, 7, and 8. Table 6, which compares the recommendations by specialization area and year of medical school graduation, was used to discuss significance because of the larger sample size for this particular analysis.

Highly significant differences ($P < 0.01$) among specializations were found for several of the current recommendations. One of these

TABLE 6

COMPARISON OF PHYSICIANS' OPINIONS REGARDING CURRENT BREAST-FEEDING RECOMMENDATIONS BY SPECIALIZATION AND YEAR OF MEDICAL SCHOOL GRADUATION, LOUISIANA, 1982

Recommendations	N	F Values			
		Specialization	d.f.	Year Med. School Grad.	d.f.
Breast milk is the best form of nourishment for infants.	273	1.74	(3,265)	0.95	(1.265)
Most infants should receive only breast milk for the first 6 months of life.	272	1.05	(3,264)	0.00	(1,264)
Most women should be encouraged by their physicians to breast-feed their infants.	270	6.75**	(3,262)	0.22	(1,262)
Breast-fed infants are less likely to have serious respiratory infections than bottle-fed.	273	5.06**	(3,265)	1.22	(1,265)
Breast-fed infants are less likely to have serious gastrointestinal infections than bottle-fed.	273	4.06**	(3,265)	0.99	(1,265)
Breast-fed infants are less likely to have allergic conditions than bottle-fed.	272	4.64**	(3,264)	0.84	(1,264)
An advantage of breast-feeding is that mothers do not know the amount of milk consumed.	269	0.41	(3,261)	1.75	(1,261)

TABLE 6 (continued)

Recommendations	N	F Values			
		Specialization	d.f.	Year Med. School Grad.	d.f.
Breast-feeding often develops a special bonding relationship between mother and infant not achieved with bottle-feeding.	272	5.96**	(3,264)	3.36	(1,264)
Breast-feeding is more economical than bottle-feeding.	273	3.13*	(3.265)	1.19	(1,265)
Breast-feeding is usually contraindicated with C-Section.	274	4.34**	(3,266)	13.64**	(1,266)
Breast-feeding is usually contraindicated with premature infants.	271	3.72*	(3,263)	22.60**	(1,263)
Breast-feeding is usually contraindicated with maternal diabetes.	272	4.55**	(3,264)	15.90**	(1,264)
Breast-feeding is usually contraindicated if a woman plans to continue working away from home after baby's birth.	274	4.28**	(3,266)	12.90**	(1,266)

*Significant at the 0.05 level of probability
**Significant at the 0.01 level of probability

recommendations was that most women should be encouraged by their physicians to breast-feed. All of the specializations were in agreement with the statement. However, pediatricians (mean - 4.55), family practitioners (mean - 4.45) and general practitioners (mean - 4.28) strongly agreed with the statement while obstetricians (mean - 3.88) agreed with the statement.

Highly significant differences ($P < 0.01$) were shown for specialization areas with regard to the statements involving breast-feeding and infant health. All categories of physicians agreed with the statement that breast-fed infants are less likely to have serious respiratory illnesses than bottle-fed infants (family practitioners - 4.18; general practitioners - 4.04; obstetricians - 3.62; and, pediatricians - 4.08). However, the mean for obstetricians (3.62) was somewhat lower than the other three specialization areas.

Pediatricians (mean - 4.33) and family practitioners (mean - 4.24) strongly agreed with the statement that breast-fed infants are less likely to have serious gastrointestinal infections than bottle-fed infants. General practitioners (mean - 4.10) and obstetricians (mean - 3.88) were in agreement with the statement.

A highly significant difference ($P < 0.01$) among specializations was also found in the last health statement that breast-fed infants are less likely to have allergic conditions than bottle-fed. Family practitioners (mean - 4.37), pediatricians (mean - 4.28) and general practitioners (mean - 4.22) strongly agreed with the statement while obstetricians agreed with the statement (mean - 3.95).

Family practitioners, general practitioners and pediatricians

are associated with infants in their practices whereas obstetricians primarily treat the mothers and rarely see infants (15). Several obstetricians commented in writing on the questionnaires that they were more comfortable dealing with the statements concerning the mothers than those dealing with infant recommendations.

A significant difference ($P < 0.05$) was shown between specialty means regarding the statement that breast-feeding is more economical than bottle-feeding. However, according to the numerical categories assigned to the ratings, all specialty areas strongly agreed with the statement (family practitioners - 4.59; general practitioners - 4.37; pediatricians - 4.38; and, obstetricians - 4.31).

The next four statements dealt with recommendations regarding breast-feeding contraindications and all showed highly significant differences ($P < 0.01$) among means.

All specialization areas agreed that Cesarean section was usually a contraindication to breast-feeding. However, means for family practitioners (3.87) and general practitioners (3.58) were in the agreement category while obstetricians (4.31) and pediatricians (4.34) strongly agreed that Cesarean section was a contraindication to breast-feeding.

There was a highly significant difference ($P < 0.01$) among specializations in regard to the statement that breast-feeding is contraindicated for premature infants. Pediatricians (mean - 3.91) and obstetricians (mean - 3.51) agreed with the statement while family practitioners (mean - 3.24) and general practitioners (mean - 2.98) were undecided.

A highly significant difference ($P < 0.01$) was seen among specialty areas in relation to the statement that breast-feeding is usually contraindicated with maternal diabetes. Pediatricians (mean - 3.94) and obstetricians (mean - 3.62) agreed that diabetes is a contraindication while family practitioners (mena - 3.38) and general practitioners (mean - 3.13) were undecided.

The relationship of specialty areas to the statement that breast-feeding is contraindicated if a woman plans to continue working away from home after her baby's birth was found to be highly significant ($P < 0.01$) among specialties. Pediatricians (mean - 3.83) and obstetricians (mean - 3.58) were in agreement with the statement while family practitioners (mean - 3.21) and general practitioners (mean - 3.02) were undecided.

Comparison of Current Recommendations by Year of Medical School Graduation

During the past decade, breast-feeding has become more popular in the United States (14,15,16). On the basis of this reported fact, the different years of physicians' medical school graduations were grouped into two categories to determine if differences existed in recommendations between physicians who graduated when bottle-feeding was almost totally practiced (before 1970) and those who graduated as breast-feeding was becoming more popular with new mothers (after 1970). This information is presented in Table 6.

There were highly significant differences ($P < 0.01$) associated with the comparison of the four statements concerning contraindications to breast-feeding by a physician's year of medical school graduation.

Those physicians graduating before 1970 (mean - 3.96) agreed that Cesarean section was usually a contraindication to breast-feeding while those graduating after 1970 (mean - 4.44) strongly agreed with the statement.

With regard to the statement that breast-feeding is contraindicated with premature infants, physicians graduating before 1970 (mean - 3.28) were undecided while physicians graduating after 1970 (mean - 4.00) agreed with the statement.

Physicians graduating before 1970 (mean - 3.40) were undecided about whether or not maternal diabetes is a contraindication to breast-feeding while those graduating after 1970 (mean - 4.01) agreed that maternal diabetes usually does preclude breast-feeding.

In the same manner, with regard to the statement that breast-feeding is contraindicated if a woman plans to continue working after having a baby, physicians graduating before 1970 were undecided (mean - 3.29) and those graduating after 1970 (mean - 3.97) were in agreement that breast-feeding is contraindicated for working mothers.

Comparison of Current Recommendations by Location of Physicians' Practices

There were no significant differences by location of a physician's practice, either rural/small town or urban/suburban, with regard to current breast-feeding recommendations as reported in Table 7.

Comparison of Current Recommendations by Physicians' Own Infants Breast-fed

Researchers have reported that physicians are more likely to recommend feeding practices for their patients which they have

TABLE 7

COMPARISON OF PHYSICIANS' OPINIONS REGARDING CURRENT BREAST-FEEDING RECOMMENDATIONS BY SPECIALTY AREA AND LOCATION OF PRACTICE (URBAN/SUBURBAN AND SMALL TOWN/RURAL), LOUISIANA, 1982

Recommendations	N	F Values			
		Specialization	d.f.	Location	d.f.
Breast milk is the best form of nourishment for infants.	271	2.05	(3,262)	0.44	(2,262)
Most infants should receive only breast milk for the first 6 months of life.	270	1.06	(3,261)	0.90	(2,261)
Most women should be encouraged by their physicians to breast-feed their infants.	268	5.35**	(3,259)	0.32	(2,259)
Breast-fed infants are less likely to have serious respiratory infections than bottle-fed.	271	2.93*	(3,262)	1.70	(2,262)
Breast-fed infants are less likely to have serious gastrointestinal infactions than bottel-fed.	271	3.84*	(3,262)	0.58	(2,262)
Breast-fed infants are less likely to have allergic conditions than bottle-fed.	270	1.68	(3,261)	0.96	(2,261)
An advantage of breast-feeding is that mothers do not know the amount of milk consumed.	267	0.33	(3,258)	0.64	(2,258)

TABLE 7 (continued)

Recommendations	N	F Values			
		Specialization	d.f.	Location	d.f.
Breast-feeding often develops a special bonding relationship between mother and infant not achieved with bottle-feeding.	270	3.36*	(3,261)	0.22	(2,261)
Breast-feeding is more economical than bottle-feeding.	271	1.96	(3,262)	0.18	(2,262)
Breast-feeding is usually contraindicated with C-Section.	272	15.44**	(3,263)	0.61	(2,263)
Breast-feeding is usually contraindicated with premature infants.	279	7.93**	(3,260)	0.24	(2,260)
Breast-feeding is usually contraindicated with maternal diabetes.	270	6.68**	(3,261)	0.12	(2,261)
Breast-feeding is usually contraindicated if a woman plans to continue working away from home after baby's birth.	272	6.88**	(3,263)	0.20	(2,236)

*Significant at the 0.05 level of probability.
**Significant at the 0.01 level of probability.

themselves used and found to be successful (4). Louisiana physicians were asked to designate on the mailed questionnaire whether or not any of their own children were ever breast-fed. Table 8 presents information relating current breast-feeding recommendations by the category labeled physician's own infant breast-fed.

A highly significant difference ($P < 0.01$) was found in the statement that breast milk is the best form of nourishment for infants. Both categories strongly agreed with this statement although the mean for physicians having breast-fed children (mean - 4.67) was higher than for those without breast-fed children (mean - 4.36).

With regard to the statement that most women should be encouraged by their physicians to breast-feed, physicians who had breast-fed children themselves strongly agreed with the statement (mean - 4.52) while those without breast-fed children agreed with the statement (mean - 3.84). The difference was highly significant ($P < 0.01$).

A significant difference ($P < 0.05$) was found with regard to the statement that breast-fed infants are less likely to have serious respiratory infections than bottle-fed infants. Both categories of physicians agreed with the statement but physicians whose own infants had been breast-fed had a higher mean score (4.09) than the physicians whose infants had not been breast-fed (mean - 3.71).

Highly significant differences ($P < 0.01$) were noted between a physician's own infant's feeding method and the statements regarding the decreased likelihood of breast-fed infants having serious gastrointestinal infections and allergic conditions. Physicians whose

TABLE 8

COMPARISON OF PHYSICIANS' OPINIONS REGARDING CURRENT BREAST-FEEDING RECOMMENDATIONS BY SPECIALTY AREA AND OWN INFANTS BREAST-FED, LOUISIANA, 1982

Recommendations	N	F Values			
		Specialization	d.f.	Own Infant Br-Fed	d.f.
Breast milk is the best form of nourishment for infants.	238	1.36	(3,230)	7.09**	(1,230)
Most infants should receive only breast milk for the first 6 months of life.	238	0.91	(3,230)	0.02	(1,230)
Most women should be encouraged by their physicians to breast-feed their infants	236	5.59**	(3,228)	25.17**	(1,223)
Breast-fed infants are less likely to have serious respiratory infections than bottle-fed.	238	4.13**	(3,230)	6.65*	1,230)
Breast-fed infants are less likely to have serious gastrointestinal infections than bottle-fed.	238	4.04**	(3,230)	7.05**	(1,230)
Breast-fed infants are less likely to have allergic conditions than bottle-fed.	237	2.65**	(3,229)	8.59**	(1,229)
An advantage of breast-feeding is that mothers do not know the amount of milk consumed.	235	0.34	(3,227)	1.13	(1,227)

TABLE 8 (continued)

Recommendations	N	F Values			
		Specialization	d.f.	Own Infant Br-Fed	d.f.
Breast-feeding often develops a special bonding relationship between mother and infant not achieved with bottle-feeding.	237	2.88*	(3,229)	17.84**	(1,229)
Breast-feeding is more economical than bottle-feeding.	238	1.00	(3,230)	0.28	(1,230)
Breast-feeding is usually contraindicated with C-Section.	239	8.13**	(3.231)	0.81	(1,231)
Breast-feeding is usually contraindicated with premature infants.	236	6.00**	(3,228)	0.43	(1,228)
Breast-feeding is usually contraindicated with maternal diabetes.	237	7.20**	(3,229)	0.67	(1,229)
Breast-feeding is usually contraindicated if a woman plans to continue working away from home after baby's birth.	239	6.59**	(3,231)	1.83	(1,231)

*Significant at the 0.05 level of probability.
**Significant at the 0.01 level of probability.

own infants were breast-fed strongly agreed (mean - 4.27) that breast-fed infants are less likely to have serious gastrointestinal infections while those whose infants had not been breast-fed agreed with the statement (mean - 3.89). In the same manner, physicians whose own infants had been breast-fed, strongly agreed (mean - 4.30) that breast-fed infants have fewer allergic conditions than bottle-fed while physicians who did not have own children breast-fed agreed with the statement (3.92).

Physicians whose own infants had been breast-fed strongly agreed (mean - 4.38) with the statement that breast-feeding often develops a special bonding relationship between mother and infant not found with bottle-feeding. Physicians who did not have own children breast-fed agreed with the statement (3.83).

Physicians Breast-Feeding Recommendations

Physicians' recommendations were also obtained from an ordinal scale check-list. For discussion purposes, the following scale was used to assign values to the five different categories:

Always: 4.21 - 5.00
Usually: 3.41 - 4.20
Occasionally: 2.61 - 3.40
Seldom: 1.81 - 2.60
Never: 1.00 - 1.80

Table 9 presents mean score information on Louisiana physicians' own recommendations concerning breast-feeding.

Most physicians agreed that they usually recommended breast-feeding for most mothers (mean - 4.08). The physicians reported that they also usually recommended preparation of breasts before delivery by women planning to breast-feed (mean - 3.83. Preparation of

TABLE 9

PHYSICIANS' RECOMMENDATIONS
REGARDING BREAST-FEEDING, LOUISIANA, 1982

Recommendations	N	Mean Scores
Breast-feeding of infants for most women.	261	4.08
Preparation of breasts before delivery.	258	3.83
Rooming-in during hospital stay.	258	3.25
Breast-feeding only for infant's first 6 months of life.	258	3.20
Breast-feeding on demand.	260	3.68
Structured breast-feeding schedule (such as every 4 hours).	253	3.53
Nursing at both breasts at each feeding.	268	3.80
Supplemental bottles of plain boiled water.	249	2.79
Supplemental bottles of water with sugar or syrup.	246	3.89
Supplemental bottles of proprietary cow's milk formula.	248	3.77
Supplemental bottles of soy milk formula.	248	3.76
Continuing to nurse with mastitis.	252	2.27
Introduction of foods before 6 months of age to breast-fed infants.	245	2.82
Iron supplementation for breast-fed infants.	247	2.85
Fluoride supplementation for breast-fed infants.	243	3.30
Vitamin D supplementation for breast-fed infants.	244	2.75
Oral contraceptives for breast-feeding mothers.	250	4.34

breasts before delivery, including examination by a physician and procedures which the mother may use, has been recommended by authorities as an important means of contributing to a successful breast-feeding experience (4,7,72).

Louisiana physicians reported that they occasionally recommended rooming-in for breast-feeding patients following delivery (mean - 3.25). Several physicians commented that they would have recommended rooming-in more often but that this was not available in the hospitals in which the physicians practiced. Rooming-in has been reported to be associated with increased duration of breast-feeding (97).

The physicians reported occasionally recommending breast-feeding only for the first six months of an infant's life (mean - 3.2). This practice has been recommended by many authorities on breast-feeding (4,5,7,8).

Breast-feeding on demand was reported to be a usual recommendation (mean - 3.68) while a structured breast-feeding schedule was also reported to be usually recommended (mean - 3.53). Authorities have reported that breast-feeding on demand is preferable to structured breast-feeding schedules. Demand feeding, which stimulates prolactin release and increased capillary circulation due to maximum emptying of breasts, enhances milk production and promotes the successful establishment of lactation (5).

Physicians reported that they usually recommended nursing at both breasts at each feeding (mean - 3.8). Authorities have recommended that an infant be allowed to nurse at one breast for about 10 minutes and then be changed to the other breast. The next feeding should then be started on the second breast to insure maximum emptying (7,28).

Louisiana physicians reported recommending supplemental bottles for infants. The physicians occasionally recommended plain water (mean - 2.79) and usually recommended bottles of water with sugar or syrup (mean - 3.89), proprietary cow milk formula (mean - 3.77) and soy milk formula (3.76). Researchers have reported that supplementary bottles for breast-fed infants may be detrimental to breast-feeding. Infants who are given supplemental bottles between breast-feedings may either begin to refuse to nurse or only nurse for a short time. Because of decreased frequency of nursing which results from supplemental bottles, lactation may fail (4,8). Water is usually not needed by the breast-fed infant because of the lower protein, sodium, potassium and chloride content of human milk as compared to cow milk (19).

Louisiana physicians seldom recommended continuing to nurse with mastitis (mean - 2.27) although many authorities currently recommend the practice. Recommended treatment for mastitis includes the continuation of nursing on both breasts along with giving the mother an antibiotic and analgesic (4). Breast abscess has been reported to be more common following sudden weaning with mastitis (8).

Physicians reported occasionally recommending the introduction of foods before six months of age to breast-fed infants (mean - 2.82). Current recommendations for breast-fed infants include the delaying of food until about six months of age (4,5,7,8).

Louisiana physicians reported occasionally recommending vitamin and mineral supplementation for breast-fed infants. The mean score for iron supplementation was 2.85, for fluroide supplementation, 3.30, and for vitamin D supplementation, 2.75.

The American Academy of Pediatrics currently recommends that iron supplementation for breast-fed infants is not needed until about four to six months of age (36). Vitamin D supplementation is recommended in cases where climatic or social conditions may interefere with irradiation of vitamin D precursors in the skin of breast-fed infants and their mothers (36). Fluoride supplementation is recommended for breast-fed infants by the Academy in the expectation that this would have a beneficial effect during the period of active mineralization of bones and teeth. The Committee on Nutrition of the American Academy of Pediatrics reported that fluoride supplementation can be delayed until six months of age and still have a satisfactory effect on reduction of dental caries (36,44).

Louisiana physicians reported that they always recommended oral contraceptives for breast-feeding mothers. Some oral contraceptives have been shown to interfere with volume and composition of breast milk (5,24). Data from a recent study using low dosage combination oral contraceptives have suggested that components and volume of breast milk vary considerably even in the absence of steroidal contraception (71). Low dosage estrogen-progestin type oral contraceptives have been suggested for use by those breast-feeding women who desire to use this method of contraception (7). However, other forms of contraception may be recommended for use by breast-feeding mothers since information leading to the recommendation of oral contraceptives during breast-feeding is still controversial (5,72).

Comparison of Physicians' Own Recommendations by Area of Sepcialization

Differences by physicians' specialization areas are presented in

Tables 10 - 12. Table 10 was used for discussion purposes because of the larger sample size.

A highly significant difference ($P < 0.01$) was found by specializations in regard to the physicians' own recommendations of breast-feeding for most women. Three categories reported that they usually recommended breast-feeding for most women (family practitioners - 4.15, general practitioners - 3.88, and obstetricians - 3.81). Pediatricians (mean - 4.34) reported that they always recommended breast-feeding for most women.

Three of the specialty areas reported that they occasionally recommended breast-feeding only for the first six months of an infant's life (general practitioners - 3.19; obstetricians - 2.77 and pediatricians - 3.34) while family practitioners (mean - 3.46) always recommended this. The difference among specialty areas was significant ($P < 0.05$).

The recommendation of breast-feeding on demand showed significant differences ($P < 0.05$) among specialization areas with family practitioners (mean - 3.78), obstetricians (mean - 3.72) and pediatricians (mean - 3.86) reporting that they usually recommended the practice while general practitioners occasionally recommended this (mean - 3.16).

A structured breast-feeding schedule was usually recommended by obstetricians (mean - 3.84) and pediatricians (mean - 3.63) while this type of feeding schedule was only occasionally recommended by family practitioners (mean - 3.37) and general practitioners (mean - 3.63) The difference was significnat ($P < 0.05$).

TABLE 10

COMPARISON OF PHYSICIANS' OWN RECOMMENDATIONS REGARDING BREAST-FEEDING BY SPECIALTY AREA AND YEAR OF MEDICAL SCHOOL GRADUATION, LOUISIANA, 1982

Recommendations	N	F Values			
		Specialization	d.f.	Year Med. School Grad.	d.f.
Breast-feeding of infants for most women.	261	3.97**	(3,253)	0.24	(1,253)
Preparation of breasts before delivery.	258	1.56	(3,250)	1.36	(1,250)
Rooming-in during hospital stay.	258	0.80	(3,250)	1.02	(1,250)
Breast-feeding only for infants' first 6 months of life.	258	3.65*	(3,250)	0.01	(1,250)
Breast-feeding on demand.	260	3.32*	(3.252)	0.54	(1,252)
Structured breast-feeding schedule (such as every 4 hours).	253	3.64*	(3.245)	0.02	(1,245)
Nursing at both breasts at each feeding.	258	3.93**	(3,250)	0.32	(1,250)
Supplemental bottles of plain boiled water.	249	1.46	(3.241)	8.26**	(1,241)
Supplemental bottles of water with sugar or syrup.	246	4.65**	(3.238)	0.01	(1,238)

TABLE 10 (continued)

Recommendations	N	F Values				
		Specialization	d.f.	Year Med. School Grad.		d.f.
Supplemental bottles of proprietary cow's milk formula.	248	0.12	(3,240)	2.58		(1,240)
Supplemental bottles of soy milk formula.	248	0.38	(3,240)	0.00		(1,240)
Continuing to nurse with mastitis.	252	1.32	(3,244)	21.84**		(1,244)
Introduction of foods before 6 months of age to breast-fed infants.	245	1.20	(3,237)	11.16**		(1,237)
Iron supplementation for breast-fed infants.	247	1.12	(3,239)	0.03		(1,239)
Fluoride supplementation for breast-fed infants.	243	4.61**	(3,235)	0.04		(1,235)
Vitamin D supplementation for breast-fed infants.	244	8.23**	(3,236)	10.01**		(1,236)
Oral contraceptives for breast-feeding mothers	250	7.33**	(3,242)	0.04		(1,242)

*Significant at the 0.05 level of probability.
**Significant at the 0.01 level of probability.

A highly significant difference ($P < 0.01$) was found among specialization areas in relation to the recommendation of nursing at both breasts at each feeding. Family practitioners (mean - 3.85), obstetricians (mean - 3.92) and pediatricians (mean - 3.85) usually recommended the practice while general practitioners (mean - 3.44) occasionally recommended this.

A highly significant difference ($P < 0.01$) was found among specializations in regard to supplemental bottles with sugar or syrup for breast-feeding babies. However, according to the numerical categories assigned for discussion, all specializations were in the category of usual recommendation (family practitioners - 3.59, general practitioners - 3.69, obstetricians - 3.93 and pediatricians - 4.20). The mean for pediatricians was somewhat higher than the other specialization means.

A highly significant difference ($P < 0.01$) was also found by specialization area in relation to the recommendation of fluoride supplementation for breast-fed infants. Pediatricians (mean - 3.77) usually recommended the practice while family practitioners (mean - 3.31), general practitioners (mean - 2.91) and obstetricians (mean - 2.84) occasionally recommended supplementation.

A highly significant difference ($P < 0.01$) was seen for specialization areas with regard to vitamin D supplementation for breast-fed infants. Pediatricians (mena - 2.26) seldom recommended this while family practitioners (mean - 2.79), general practitioners (mean - 2.91 and obstetricians (mean - 3.39) occasionally recommended vitamin D supplementation for breast-fed infants.

A highly significant difference ($P < 0.01$) was found among specialization areas and the recommendation of oral contraceptives for breast-feeding mothers. Obstetricians (mean - 4.71), general practitioners (mean - 4.59) and family practitioners (mean - 4.24) always recommended oral contraceptives for breast-feeding mothers while pediatricians (mean - 4.00) usually recommended this practice.

Comparison of Physicians' Recommendations by Year of Medical School Graduation

The comparison of a physician's breast-feeding recommendations with his specialty area and year of medical school graduation is presented in Table 10.

Physicians graduating before 1970 (mean - 2.62) and after 1970 (mean - 3.24) were in the category of occasional recommendation regarding the use of supplemental bottles of plain boiled water for breast-fed infants. There was a highly significant difference ($P < 0.01$) between the two means, with the before 1970 group at the dividing point (2.61) between the seldom and occasionally categories.

A highly significant difference ($P < 0.01$) was found by year of medical school graduation with regard to the recommendation of continuing to nurse with mastitis. Those physicians graduating before 1970 (mean - 1.98) seldom recommended continuing to nurse with mastitis while those graduating after 1970 (mean - 3.07) occasionally recommended this practice.

With regard to the use of foods before six months of age for breast-fed infants, a highly significant difference ($P < 0.01$) was found between the two categories. However, both groups of physicians were

still in the range of occasionally recommending foods for breast-fed infants before six months of age. Those graduating before 1970 (mean - 2.63) were at the bottom of the category range for occasionally recommending while those graduating after 1970 (mean - 3.36) were at the upper limits of this category.

In the same manner, with regard to recommendation of vitamin D supplementation for breast-fed infants, both categories reported occasionally recommending the practice (before 1970 mean - 2.64 and after 1970 mean - 3.05). The difference was highly significant ($P < 0.01$).

Comparison of Physicians' Recommendations by Location of Practice

Table 11 presents information on the comparison of Louisiana physicians own recommendations concerning breast-feeding by location of practice.

A significant difference ($P < 0.05$) was found in the relationship between the location of a physician's practice and the recommendation concerned with supplementary bottles of plain boiled water for breast-fed infants. Physicians practicing in rural/small town locations seldom recommended this practice (mean - 2.48) while physicians in urban/suburban locations occasionally recommended supplemental bottles of water (mean - 3.00).

A significant difference ($P < 0.05$) was also noted between the location of practice and the physician's recommendation of giving foods before six months to breast-fed infants. Those physicians in rural/small town locations reported seldom recommending the practice

TABLE 11

COMPARISON OF PHYSICIANS' OWN RECOMMENDATIONS REGARDING BREAST-FEEDING BY SPECIALTY AREA AND LOCATION OF PRACTICE (URBAN/SUBURBAN AND SMALL TOWN/RURAL), LOUISIANA, 1982

Recommendations	N	F Values			
		Specialization	d.f.	Location	d.f.
Breast-feeding of infants for most women.	259	3.91**	(3,251)	1.83	(1,251)
Preparation of breasts before delivery.	256	4.79**	(3.248)	0.08	(1,248)
Rooming-in during hospital stay.	256	0.12	(3,248)	0.61	(1,248)
Breast-feeding only for infants' first 6 months of life.	256	2.29	(3,248)	0.00	(1,248)
Breast-feeding on demand.	258	3.93*	(3,250)	1.19	(1,250)
Structured breast-feeding schedule (such as every 4 hours).	252	3.82*	(3,244)	0.38	(1,244)
Nursing at both breasts at each feeding.	256	3.54*	(3,248)	4.03	(1,248)
Supplemental bottles of plain boiled water.	247	0.85	(3,239)	5.15*	(1,239)
Supplemental bottles of water with sugar or syrup.	244	4.16**	(3,236)	2.30	(1,236)
Supplemental bottles of proprietary cow's milk formula.	246	0.28	(3,238)	0.96	(1,238)

TABLE 11 (continued)

Recommendations	N	F Values			
		Specialization	d.f.	Location	d.f.
Supplemental bottles of soy milk formula.	246	1.85	(3,238)	0.92	(1,238)
Continuing to nurse with mastitis.	250	1.62	(3,242)	0.61	(1,242)
Introduction of foods before 6 months of age to breast-fed infants.	243	3.10*	(3,242)	6.51*	(1,242)
Iron supplementation for breast-fed infants.	245	0.97	(3,237)	0.08	(1,237)
Fluoride supplementation for breast-fed infants.	241	6.05**	(3,233)	0.42	(1,233)
Vitamin D supplementation for breast-fed infants.	242	6.68**	(3,234)	0.23	(1,234)
Oral contraceptives for breast-feeding mothers.	248	5.93**	(3,240)	0.03	(1,240)

*Significant at the 0.05 level of probability.
**Significant at the 0.01 level of probability.

(mean - 2.55) while physicians in urban/suburban locations occasionally recommended the practice (mean - 3.00).

Comparison of Physicians' Recommendations by Physicians' Own Infants Breast-Fed

Table 12 presents data comparing physicians' recommendations regarding breast-feeding in relation to whether the physicians' own children had been breast-fed.

A highly significant difference ($P < 0.01$) was found with the relationship of the recommendation of breast-feeding of infants for most women. Physicians whose own infants had been breast-fed reported always recommending breast-feeding for most women (mean - 4.22) while physicians whose own infants had not been breast-fed reported usually recommending breast-feeding for most women (mean - 3.71).

Physicians whose own infants were breast-fed reported usually recommending preparation of breasts for breast-feeding before delivery (mean - 3.99) while physicians who did not have breast-fed children reported occasionally recommending this practice (mean - 3.40). The difference was highly significant ($P < 0.01$).

A highly significant difference ($P < 0.01$) was also reported with regard to the nursing of an infant from both breasts at each feeding. Both categories of physicians reported usually recommending the practice but those physicians who had breast-fed children of their own had a higher mean score (3.99) than those physicians who did not have breast-fed children (mean - 3.58).

TABLE 12

COMPARISON OF PHYSICIANS' OWN RECOMMENDATIONS REGARDING BREAST-FEEDING BY SPECIALTY AREA AND OWN INFANTS BREAST-FED, LOUISIANA, 1982

Recommendations	N	F Values			
		Specialization	d.f.	Own Infant Br-Fed	d.f.
Breast-feeding of infants for most women.	227	4.45**	(3,219)	13.68**	(1,219)
Preparation of breasts before delivery.	224	2.68	(3,216)	9.30**	(1,216)
Rooming-in during hospital stay.	224	0.99	(3,216)	1.94	(1,216)
Breast-feeding only for infants' first 6 months of life.	224	3.37*	(3,216)	0.72	(1,216)
Breast-feeding on demand.	226	3.41*	(3,218)	3.86	(1,218)
Structured breast-feeding schedule (such as every 4 hours).	220	3.07*	(3,212)	1.03	(1,212)
Nursing at both breasts at each feeding.	224	1.05	(3,216)	7.01**	(1,216)
Supplemental bottles of plain boiled water.	215	1.87	(3,207)	0.76	(1,207)
Supplemental bottles of water with sugar or syrup.	213	4.30**	(3,205)	0.51	(1,205)

TABLE 12 (continued)

Recommendations	N	F Values			
		Specialization	d.f.	Own Infant Br-Fed	d.f.
Supplemental bottles of proprietary cow's milk formula.	214	0.41	(3,206)	0.80	(1,206)
Supplemental bottles of soy milk formula.	214	1.32	(3,206)	0.39	(1,206)
Continuing to nurse with mastitis.	218	3.37*	(3,210)	2.11	(1,210)
Introduction of foods before 6 months of age to breast-fed infants.	211	4.72**	(3,203)	0.06	(1,203)
Iron supplementation for breast-fed infants.	213	0.18	(3,205)	1.89	(1,205)
Fluoride supplementation for breast-fed infants.	209	6.01**	(3,201)	0.44	(1,201)
Vitamin D supplementation for breast-fed infants.	210	7.04**	(3,202)	0.94	(1,202)
Oral contraceptives for breast-feeding mothers.	218	4.57**	(3,210)	1.40	(1,210)

*Significant at the 0.05 level of probability
**Significant at the 0.01 level or probability

Discussion Times of Breast-Feeding by Physicians

Table 13 presents the discussion time of breast-feeding information and techniques with patients by Louisiana physicians. Most physicians reported that they discussed the various topic with patients at some time, either prenatally or postnatally, or both. Very few physicians reported that they never discussed breast-feeding topics with patients.

Tables 14-17 present discussion times by the four different physician specialization areas. Obstetricians reported that they usually discussed most breast-feeding topics with patients prenatally (Table 16). The one area they reported discussing with patients postnatally was management of breast-feeding problems, such as engorgement, sore nipples, mastitis, etc.

For the most part, pediatricians reported that they primarily discussed most breast-feeding topics with patients postnatally (Table 17). Several pediatricians wrote comments on the questionnaries that they rarely saw maternity patients before delivery and, therefore, had no opportunity to disucss these topics with them prenatally.

Breast-feeding authorities have advocated that physicians prepare women for breast-feeding before the birth of their infants and provide adequate follow-up through discussion of breast-feeding management and problems after delivery (4,8,72). Open discussion of questions and the provision of reading materials for the patient by the physician will help to promote a successful breast-feeding experience according to Lawrence (4).

TABLE 13

AREAS OF INFORMATION ON BREAST-FEEDING BY TIME OF DISCUSSION BY PHYSICIANS, LOUISIANA, 1982

	N	Percent by Usual Time of Discussion				Total Percent
		Prenatal	Postnatal	Pre- and Postnatal	Not Discussed	
Anatomy of breasts.	261	37	11	49	3	100
Physiology of lactation.	262	37	25	36	2	100
Techniques of breast-feeding.	264	31	42	20	7	100
Let-down reflex.	261	29	38	29	4	100
Preparation of breasts for breast-feeding.	266	46	28	21	5	100
Care of breasts during breast-feeding.	266	28	46	18	8	100
Maternal diet.	267	39	36	16	9	100
Management of problems (engorgement, sore nipples, mastitis, etc.)	266	21	55	18	6	100

TABLE 14

AREAS OF INFORMATION ON BREAST-FEEDING BY TIME OF DISCUSSION BY FAMILY PRACTITIONERS, LOUISIANA, 1982

	N	Percent by Usual Time of Discussion				Total Percent
		Prenatal	Postnatal	Pre- and Postnatal	Not Discussed	
Anatomy of breasts.	71	47	7	42	4	100
Physiology of lactation.	71	44	17	35	4	100
Techniques of breast-feeding.	71	42	31	17	10	100
Let-down reflex.	70	37	23	31	9	100
Preparation of breasts for breast-feeding.	71	52	20	20	8	100
Care of breasts during breast-feeding.	71	35	35	17	13	100
Maternal diet.	71	41	34	14	11	100
Management of problems (engorgement, sore nipples, mastitis, etc.)	71	27	52	14	7	100

TABLE 15

AREAS OF INFORMATION ON BREAST-FEEDING BY TIME OF DISCUSSION BY GENERAL PRACTITIONERS, LOUISIANA, 1982

	N	Percent by Usual Time of Discussion				Total Percent
		Prenatal	Postnatal	Pre- and Postnatal	Not Discussed	
Anatomy of breasts.	44	43	10	43	4	100
Physiology of lactation.	43	37	14	47	2	100
Techniques of breast-feeding.	44	36	32	32	-0-	100
Let-down reflex.	42	26	26	48	-0-	100
Preparation of breasts for breast-feeding.	45	40	24	36	-0-	100
Care of breasts during breast-feeding.	44	27	36	32	5	100
Maternal diet.	45	44	20	31	5	100
Management of problems (engorgement, sore nipples, mastitis, etc.).	44	29	40	29	2	100

TABLE 16

AREAS OF INFORMATION ON BREAST-FEEDING BY TIME OF DISCUSSION BY OBSTETRICIANS, LOUISIANA, 1982

	N	Percent by Usual Time of Discussion				Total Percent
		Prenatal	Postnatal	Pre- and Postnatal	Not Discussed	
Anatomy of breasts.	69	54	3	42	1	100
Physiology of lactation.	69	61	9	29	1	100
Techniques of breast-feeding.	68	43	28	23	6	100
Let-down reflex.	69	42	29	26	3	100
Preparation of breasts for breast-feeding.	69	80	4	12	4	100
Care of breasts during breast-feeding.	69	46	35	15	4	100
Maternal diet.	69	62	16	6	6	100
Management of problems (engorgement, sore nipples, mastitis, etc.	69	28	56	10	6	100

TABLE 17

AREAS OF INFORMATION ON BREAST-FEEDING BY TIME OF DISCUSSION BY PEDIATRICIANS, LOUISIANA, 1982

	N	Percent by Usual Time of Discussion				Total Percent
		Prenatal	Postnatal	Pre- and Postnatal	Not Discussion	
Anatomy of breasts.	77	10	25	64	1	100
Physiology of lactation.	79	10	52	37	1	100
Techniques of breast-feeding.	81	10	69	12	9	100
Let-down reflex.	80	10	66	20	4	100
Preparation of breasts for breast-feeding.	81	16	58	20	6	100
Care of breasts during breast-feeding.	82	6	68	16	10	100
Maternal diet.	82	6	65	17	12	100
Management of problems (engorgement, sore nipples, mastitis, etc.)	81	6	64	24	6	100

Time of Breast-Feeding Initiation Recommended by Physicians

Table 18 presents Louisiana physicians recommended times of initiating breast-feeding by breast-feeding mothers.

Early initiation of breast-feeding has been reported to be associated with increased duration of breast-feeding (4,94,95). Thirty-seven percent of Louisiana physicians reported that they recommended immediate nursing for breast-feeding infants and 15 percent reported an initiation breast-feeding time of one to four hours. Forty-eight percent of the responding physicians reported recommending breast-feeding initiation times of greater than four hours.

Information presented showed that obstetricians were more likely to recommend immediate initiation of breast-feeding (48 percent) as compared to family practitioners (40 percent), general practitioners (28 percent) and pediatricians (28 percent). General practitioners reported the largest percentage by specialty (65 percent) to recommend breast-feeding initiation of greater than four hours.

Physicians' Reasons for Discouraging Mothers from Breast-Feeding

Louisiana physicians, when asked to give their reasons for discouraging mothers from breast-feeding, listed 188 reasons (Table 19). Many physicians listed two and three reasons, with three reasons the maximum number listed.

Table 20 gives Louisiana physicians reasons for discouraging mothers from breast-feeding by area of specialization. Pediatricians listed 90 reasons (48 percent), obstetricians and family practitioners each listed 41 reasons (22 percent for each category) and general practitioners listed 16 reasons (8 percent).

TABLE 18

PHYSICIANS' RECOMMENDED INITIATION TIME OF BREAST-FEEDING
BY AREA OF SPECIALIZATION, LOUISIANA, 1982

	Percent by Specialization				
Hours Following Delivery	Family Practice (N = 55)	General Practice (N = 29)	Obstetrician (N = 58)	Pediatrician (N = 71)	Total (N = 213)
Immediately	40	28	48	28	37
1 to 4 hours	13	7	14	21	15
Over 4 hours	47	65	38	51	48
Total	100	100	100	100	100

TABLE 19

PHYSICIANS' REASONS FOR DISCOURAGING MOTHERS
FROM BREAST-FEEDING BY SPECIALTY AREA OF PRACTICE, LOUISIANA, 1982

Reasons	N	Percent by Specialty Area of Practice				
		Family Pract.	General Pract.	Obstetrician	Pediatrician	Total
Maternal Desire Not to Breast-Feed	49	14	6	33	47	26
Maternal Disease (fever, infections, tuberculosis)	45	2	7	20	53	24
Maternal Medications	21	24	5	19	52	12
Maternal Breast Problems (mastitis, inverted nipples, small breasts)	21	33	14	10	43	12
Maternal Mental, Emotional and Psychological Problems	20	35	5	20	40	11
Infant Problems (prematurity, fialure to gain weight)	12	25	25	8	42	6
Maternal Drug or Alcohol Addiction	10	-0-	10	20	70	5
Working Mothers	6	16	16	34	34	2
Insufficient Milk	4	50	-0-	25	25	2
Total	188	22	8	22	48	100

The list of 188 reasons was separated into nine specific categories which included the following: maternal desire not to breast-feed; maternal disease (fever, infections and tuberculosis), maternal medications; maternal breast problems (mastitis, inverted nipples, small breasts); maternal mental, emotional and psychological problems; maternal drug or alcohol addiction; working mothers; insufficient milk; and, infant problems (prematurity and failure to gain weight).

The most commonly listed reason (26 percent) by physicians for discouraging mothers from breast-feeding was maternal desire not to breast-feed. Many physicians wrote additional comments concerning this reason which said that they felt that mothers were being compelled to breast-feed by medical and societal pressures when the mothers did not really want to breast-feed at all. Several physicians wrote that mothers were being made to feel extremely guilty if they did not breast-feed their infants. One researcher reported that only a very few years ago some mothers who desired to breast-feed wrote that they were the ones who felt out of place and were perhaps doing something unnatural (4).

Confidence is the key to successful breast-feeding and comes from wanting to breast-feed and having the adequate preparation to do so. A woman who strongly desires not to breast-feed would most probably not have adequate preparation and would tend to stop nursing at the first sign of a problem (4,8).

Maternal disease and infections, such as fever, infection and tuberculosis, were 24 percent of the total reasons listed to discourage

mothers from breast-feeding. Current recommendations seem to promote continuance of breast-feeding with most maternal illnesses. Goldfarb and Tibbets (8) reported that a mother with fever who wants to nurse and feels well enough to nurse should be allowed to do so if she is not contagious.

Lawrence (4) reported that breast-feeding can be permitted when maternal pulmonary tuberculosis has been treated for at least a week, if compliance with maternal therapy is assured, and the infant is receiving isoniazid prophylaxis.

Severe illnesses, such as congestive heart failure, eclampsia or typhoid fever may be contraindications to breast-feeding according to Jelliffe and Jelliffe (5). Mothers with active hepatitis and hepatitis carriers should be advised not to nurse (8).

Maternal medications were 12 percent of the total listed reasons to discourage mothers from breast-feeding. Most medications are excreted into breast milk in varying degrees (5). Medications for lactating women need to be considered in relation to dosage, duration of use and known toxicity (71). Medications should be avoided during lactation unless clearly and specifically indicated (5).

Maternal breast problems, such as mastitis, inverted nipples and small breasts, were also 12 percent of the total list. The current usual treatment for mastitis involves treating the mother's condition with antibiotics and rest, and allowing the infant to continue to nurse even on the affected breast (4). Goldfarb and Tibbets (8) reported that breast abscess is more common following abrupt weaning with mastitis.

Breast size is related to the amount of fat deposition and has no relationship to a woman's ability to nurse her infant (4). Inverted nipples should pose no problem for nursing mothers if adequate preparation is made before delivery. Rolling or stretching the tissue during the prenatal period will help to make the nipples more protractile (7).

Maternal mental, emotional and psychological problems were 11 percent of the total reasons listed to discourage mothers from nursing. Since successful breast-feeding is so closely related to maternal confidence and freedom from stress and tension, severe maternal emotional or psychological problems could hinder development of a successful breast-feeding experience (8). This reason could be closely related to the previously listed one of maternal desire not to breast-feed. A mother who sincerely does not want to breast-feed may feel so guilty that the emotional strain actually renders her unable to breast-feed (4,8).

Infant problems, such as prematurity and failure to gain weight, were six percent of the total reasons listed as cause to discourage mothers from breast-feeding. There is controversy regarding breast-feeding of pre-term infants less than 38 weeks gestational age (7,8) but most authorities agree that the moderately premature infant grows as well on breast milk as on formula (76,77).

Breast milk offers advantages to premature infants through antimicrobial agents, low potential renal solute load, amino acid pattern and digestibility of fats (7). However, some studies indicate that very premature infants require more protein, calcium and sodium

than is available from human milk if they are to grow at a rate comparable to growth in utero. Pre-term infants of twenty-eight to thirty-two weeks gestational age, who were fed breast milk, were reported to have inadequate weight gain, skeletal mineralization and length increase (77,78).

There is yet no known optimal growth rate for infants less than thirty-two weeks. Neonatologists often have tried to attain the same growth rate for these infants that would have been experienced in utero (8).

The mother of a premature infant who wants to nurse will require special help and encouragement (8). Many premature infants are unable to nurse and, therefore, milk must be expressed and collected before feeding. Ideally, the pre-term infant should receive his own mother's fresh breast milk with the composition of the milk more specifically suited to his individual requirements than donor's milk would be. Therefore, the mother of a hospitalized pre-term infant would require close proximity to the hospital nursery for her infant to receive her milk many times daily (8).

True failure-to-thrive is seen in infants with congenital heart disease, renal disease, infections, neurological disease and metabolic or endocrine abnormalities (8). Often failure to gain weight may be linked to the mother's inadequate milk supply and the solution to this problem lies in helping the mother produce more milk. Milk supply is increased by the frequency and duration of nursing. Without adequate stimulation of the breasts, none of the remedies such as good nutrition, large fluid intake or rest will result in increased milk supply (8).

Maternal drug or alcohol addiction was mentioned five percent of the total as reason to discourage breast-feeding. Drug and alcohol addiction are contraindications to breast-feeding because of the adverse effect on the infant. Blood levels of alcohol in a nursing infant's blood closely parallels that in the mother's system and may cause gastrointestinal problems and nervous system excitability in the infant (74). Ethanol in large doses also appears to inhibit the let-down reflex by interfering with oxytocin release (5).

Heroin addiction is a contraindication to breast-feeding in that babies born to addicts suffer withdrawal symptoms and have uncoordinated and ineffective sucking reflexes (73). Impairment of DNA and RNA formation has been reported in cells of newborn animals nursed by mothers whose milk contained cannabis (4).

Working mothers were two percent of the total reasons given to discourage breast-feeding. A woman who returns to work after the birth of her infant may continue to breast-feed her infant during her time at home and use formula or expressed milk when she is away from her baby. Even if a woman is only able to breast-feed for six weeks before she returns to work, this is to the infant's advantage and worth the effort (4,8).

Insufficient milk was two percent of the total listed reasons to discourage mothers from breast-feeding. As discussed earlier, an inadequate milk supply usually is the result of too infrequent nursing. An average number of feedings during the first month is ten times per day with both breasts offered at each feeding. Mothers following a structured feeding schedule may not allow their infants enough feeding times which results in a decreased milk supply (8).

Fatigue, tension and anxiety can be causes of an inadequate milk supply. When the let-down reflex is inhibited by fatigue or stress, the infant receives only a small amount of relatively low-fat milk from the terminal lacteals (5). This results in a cycle of increasing stress with a hungry dissatisfied infant who is frustrated in each attempt to nurse and an increasingly anxious mother. A successful breast-feeding experience depends on a calm restful environment to facilitate the let-down reflex. Support from family, medical personnel and friends is essential to help prevent lactation failure (4,7,8).

Although many reasons were mentioned by physicians as cause to discourage breast-feeding, several experts recommend that a mother never be discouraged from breast-feeding if she really desires to do so unless it would jeopardize her own or her infant's health (4,5,7). Most problems encountered with breast-feeding can be overcome by adequate preparation and a strong desire to achieve a successful experience.

Physician's Opinions of the Adequacy of Medial School Breast-Feeding Information

Most Louisiana physicians (62 percent) reported that information on breast-feeding received in medical school was insufficient (Table 20). General practitioners (53 percent) were the only specialty group which specified that their medical school breast-feeding information was sufficient.

The American Academy of Pediatrics has recommended that better education about breast-feeding be provided in the curriculum of

physicians (8). Physicians who are well-informed about breast-feeding and offer support and encouragement to their patients can favorably influence the number of breast-feeding mothers in their practices (4).

TABLE 20

PHYSICIANS' OPINIONS AS TO ADEQUACY OF BREAST-FEEDING INFORMATION RECEIVED IN MEDICAL SCHOOL, LOUISIANA, 1982

Area of Practice	N	Percent by Adequacy of Breast-Feeding Information*		
		Sufficient	Not Enough	Total Percent
Family Practice	71	42	58	100
General Practice	43	53	47	100
Obstetrician	68	32	68	100
Pediatrician	86	30	70	100
Total	268	38	62	100

*The category "too much" was on the questionnaire and received no responses.

Breast-Feeding Practices in Louisiana Hospitals

Information on the reported breast-feeding practices and policies of Louisiana hospitals is presented in Table 21.

Breast-feeding by most maternity patients was reported to be occasionally practiced in Louisiana hospitals (mean - 3.33). Rooming-in was reported to occur seldomly in Louisiana hospitals (mean - 2.18). A study conducted by Jackson et al. (97) reported that women who had participated in hospital rooming-in programs nursed significantly longer than those who had not participated.

TABLE 21

HOSPITAL MEAN SCORES BY EXTENT OF USE OF SELECTED PRACTICES AND POLICIES CONCERNING BREAST-FEEDING, LOUISIANA, 1982

Practices	N	Mean
Breast-feeding by maternity patients.	82	3.33
Rooming-for breast-feeding patients.	82	2.18
Demand feeding for breast-fed infants.	82	3.60
Structured breast-feeding schedule (such as every 4 hours).	82	3.00
Supplementary bottles of plain boiled water for breast-fed infants.	81	3.12
Supplementary bottles of water with sugar or syrup for breast-fed infants.	81	3.07
Supplementary bottles of proprietary cow's milk formula for breast-fed infants.	82	4.52
Supplementary bottles of soy formula for breast-fed infants.	81	4.29
Educational programs on breast-feeding for staff.	81	3.22
Educational programs on breast-feeding for patients.	82	3.69
Medication routinely given to patients to suppress lactation after delivery.	81	3.20

Policies	N	Mean
Hospital policy endorses breast-feeding as the best way to feed infants.	81	3.25
Hospital staff actively encourages patients to breast-feed.	80	3.19
Hospital staff is upportive of patients choosing to breast-feed.	82	4.38

Demand feeding was reported to be usually practiced in Louisiana hospitals (mean - 3.60) while structured feeding was practiced occasionally (mean - 3.00). Authorities have encouraged the practice of demand feeding by breast-feeding mothers because of its contribution to increased milk production (4,8,93).

Louisiana hospital spokesmen reported occasionally giving supplemental bottles of plain boiled water (mean - 3.12) as well as occasionally giving supplemental bottles of water with sugar or syrup (mean - 3.07) to breast-feeding infants. The hospitals reported always giving supplemental bottles of proprietary cow milk formula (mean - 4.52) and soy milk formula (mean - 4.29) to breast-fed infants. Giving supplementary bottles to nursing infants has been reported to be detrimental to the establishment of breast-feeding (4,5,7,8).

Louisiana hospital spokesmen reported occasionally conducting educational programs on breast-feeding for staff (mean - 3.22) and usually providing breast-feeding education programs for patients (mean - 3.69). Experts have advocated the practice of educating hospital staff on breast-feeding (4,7,8). Wood (104) reported that information and educational programs aimed at hospital staff were found to be as effective in increasing breast-feeding rates as direct education of new patients.

The practice of routinely giving medication to patients after delivery to suppress lactation was reported by Louisiana hospitals to be practiced occasionally (mean - 3.20).

Louisiana hospital spokesmen reported they were undecided about having policies that endorsed breast-feeding as the best way to

feed infants (mean - 3.25). They also reported they were undecided about hospital staff's actively encouraging patients to breast-feed (mean - 3.19). However, Louisiana hospitals strongly agreed that hospital staff was supportive of patients choosing to breast-feed (mean - 4.38). The American Academy of Pediatrics has recommended that prenatal clinics and maternity wards should provide a favorable climate for breast-feeding, as well as staff members who are knowledgeable about breast-feeding (8).

Comparison of Hoospital Practices by Number of Life Births

Table 22 presents data comparing the frequency of Louisiana hospital practices and policies by the mean number of live births.

A significant difference ($P < 0.05$) was found in the relationship of the hospital practice of rooming-in to the number of live births occurring in the hospitals. The mean number of live births for those hospitals which reported that breast-feeding patients always/usually practiced rooming-in was 734 live births, for the occasional practice of rooming in, 1440 live births, and for those seldom practicing rooming-in, 727 live births.

A highly significant difference ($P < 0.01$) was noted in the policy of hospital staff's offering support to patients choosing to breast-feed. The disagree/strongly disagree category for this particular practice had only one hospital within this category. This was a large hospital with 5602 live births during 1981 which, as of the time of completion of the questionnaire, did not have any breast-feeding patients in the hospital. The hospital spokesman who completed the questionnaire commented that staff could not be supportive of breast-

TABLE 22

AVERAGE NUMBER OF LIVE BIRTHS PER YEAR BY EXTENT OF FOLLOWING SELECTED HOSPITAL PRACTICES AND POLICIES CONCERNING BREAST-FEEDING, LOUISIANA, 1982

Practices	Number live births by Practices and Policies			
	Always-Usually	Occasionally	Seldom-Never	F(29,38)
Breast-feeding by maternity patients.	1138	775	1887	0.03
Rooming-in for breast-feeding patients.	734	1440	727	3.42*
Demand feeding for breast-fed infants.	896	975	1253	0.44
Structured breast-feeding schedule (such as every 4 hours).	1002	765	1030	0.34
Supplementary bottles of plain boiled water for breast-fed infants.	1261	625	992	0.86
Supplementary bottles of water with sugar or syrup for breast-fed infants.	1246	704	1137	0.49
Supplementary bottles of proprietary cow's milk formula for breast-fed infants.	65	1428	904	0.22
Supplementary bottles of soy formula for breast-fed infants.	1090	1828	837	0.89
Educational programs on breast-feeding for staff.	1056	919	949	0.43

TABLE 22 (continued)

Practices	Number live births by Practices and Policies			
	Always÷ Usually	Occasionally	Seldom- Never	F(29,38)
Educational programs on breast-feeding for patients.	1105	994	498	0.61
Medication routinely given to patients to suppress lactation after delivery	981	1086	1928	0.18

Policies	Mean			
	Strongly Agree/ Agree	Undecided	Disagree/ Str. Disagree	F(29,38)
Hospital policy endorses breast-feeding as the best way to feed infants.	846	661	1483	0.09
Hospital staff actively encourages patients to breast-feeed.	892	455	1420	0.36
Hospital staff is supportive of patients choosing to breast-feed.	932	200	5602	5.41**

*Siginficant at the 0.05 level of probability
**Significant at the 0.01 level of probability

feeding patients when there were no breast-feeding patients to support.

Comparison of Hospital Practices by Hospital Size

A significant difference ($P < 0.05$) was seen in the relationship of hospital size (number of beds) to frequency of the practice of rooming-in for breast-feeding patients as presented in Table 23. Larger hospitals (mean - 237) reported the occasional practice of rooming-in by breast-feeding mothers while the smaller hospitals were about equally divided into the always/usually category (mean - 142) and the seldom/never category (mean - 155).

A highly significant difference ($P < 0.01$) was shown in the relationship of hospital size to frequency of the policy of hospital staff's supporting patients who choose to breast-feed. The mean number of beds for hospitals in the strongly agree/agree category was 164 and in the undecided category, 60 beds. One very large hospital with 1642 beds reported disagreement/strong disagreement with the statement that staff was supportive of patients choosing to breast-feed. The respondent for this hospital noted on the questionnaire that this hospital does not yet have any breast-feeding patients.

Comparison of Hospital Practices by Time of Breast-Feeding Initiation

Table 24 presents data on the comparison of frequency of hospital practices and policies to the initiation time of breast-feeding in hospitals. A significant difference ($P < 0.05$) was noted in the relationship of the mean number of hours of breast-feeding initiation following delivery by the mean frequency of breast-feeding by patients

TABLE 23

NUMBER OF TOTAL BEDS BY EXTENT OF FOLLOWING SELECTED HOSPITAL PRACTICES AND POLICIES CONCERNING BRESAT-FEEDING, LOUISIANA, 1982

Practices	Number of beds by Practices and Policies			
	Always-Usually	Occasionally	Seldom-Never	F(29,38)
Breast-feeding by maternity patients.	217	128	485	1.75
Rooming-in for breast-feeding patients.	142	237	155	4.15*
Demand feeding for breast-fed infants.	152	176	291	0.99
Structured breast-feeding schedule (such as every 4 hours).	196	163	177	1.88
Supplementary bottles of plain boiled water for breast-fed infants.	163	204	188	0.85
Supplementary bottles of water with sugar or syrup for breast-fed infants.	165	142	251	0.10
Supplementary bottles of proprietary cow's milk formula for breast-fed infants.	52	129	201	1.49
Supplementary bottles of soy formula for breast-fed infants.	252	159	183	0.35
Educational programs on breast-feeding for staff.	193	152	210	0.21

TABLE 23 (continued)

Practices	Number of Beds by Practices and Policies			
	Always-Usually	Occasionally	Seldom-Never	F(29,38)
Educational programs on breast-feeding for patients.	188	228	96	1.74
Medication routinely given to patients to suppress lactation after delivery.	161	158	391	0.51

Policies	Mean			
	Strongly Agree/ Agree	Undecided	Disagree/ Str. Disagree	F(29,38)
Hospital policy endorses breast-feeding as the best way to feed infants.	173	152	229	0.29
Hospital staff actively encourages patients to breast-feed.	180	110	231	0.31
Hospital staff is supportive of patients choosing to breast-feed.	164	60	1642	41.44**

*Significant at the 0.05 level of probability.
**Significant at the 0.01 level or probability

TABLE 24

NUMBER OF HOURS OR BREAST-FEEDING INITIATION AFTER DELIVERY BY EXTENT OF FOLLOWING SELECTED HOSPITAL PRACTICES AND POLICIES CONCERNING BREAST-FEEDING, LOUISIANA, 1982

Practices	Number of Hours by Practices and Policies			
	Always-Usually	Occasionally	Seldom-Never	F(29,38)
Breast-feeding by maternity patients.	3	5	23	4.10*
Rooming-in for breast-feeding patients.	3	5	6	0.08
Demand feeding for breast-fed infants.	4	6	12	2.49
Structured breast-feeding schedule (such as every 4 hours).	6	3	6	0.03
Supplementary bottles of plain boiled water for breast-fed infants.	6	4	6	0.01
Supplementary bottles of water with sugar or syrup for breast-fed infants.	4	6	5	0.80
Supplementary bottles of proprietary cow's milk formula for breast-fed infants.	5	6	5	0.24
Supplementary bottles of soy formula for breast-fed infants.	6	4	6	1.35
Educational programs on breast-feeding for staff.	5	4	8	0.33

TABLE 24 (continued)

Practices	Number of Hours by Practices and Policies			
	Always-Usually	Occasionally	Seldom-Never	F(29,38)
Educational programs on breast-feeding for patients.	5	8	3	0.23
Medication routinely given to patients to suppress lactation after delivery	6	3	10	0.33

Policies	Mean			
	Strongly Agree/ Agree	Undecided	Disagree/ Str. Disagree	F(29,38)
Hospital policy endorses breast-feeding as the best way to feed infants.	5	6	6	0.43
Hospital staff actively encourages patients to breast-feed.	5	5	6	0.65
Hospital staff is supportive of patients choosing to breast-feed.	5	15	48	22.08**

*Significant at the 0.05 level of probability.
**Significant at the 0.01 level or probability

in the hospitals. A mean of three hours for breast-feeding initiation was associated with hospital maternity patients always/usually breast-feeding and a mean of five hours was associated with maternity patients occasionally breast-feeding. However, a mean of 23 hours was associated with maternity patients seldom or never breast-feeding. An increased number of hours of breast-feeding initiation was associated with a decrease in the practice of breast-feeding by hospitalized maternity patients.

In this same manner, the policy of hospital staff's supporting patients choosing to breast-feed was related inversely to the number of hours before breast-feeding was initiated. The mean breast-feeding initiation time of five hours was associated with the strongly agree/agree category of support by staff for breast-feeding patients, a mean of 15 hours was associated with support in the undecided category, and a mean of 48 hours was associated with the disagree/strongly disagree category. The difference was highly significant ($P < 0.01$).

Comparison of Hospital Practices by Number of Breast-Feeding Infants

Significant differences ($P < 0.05$) were noted in the comparison of the mean number of breast-fed infants by frequency of breast-feeding by maternity patients in Louisiana hospitals and rooming-in by breast-feeding patients (Table 25). The mean number of breast-fed infants reported by Louisiana hopsitals correlated well with the reported practice of breast-feeding. A mean of 474 breast-fed infants was related to the always/usually category, a mean of 163 was related to the occasionally category, and a mean of 17 breast-fed infants was related to the seldom/never category.

TABLE 25

AVERAGE NUMBER OF BREAST-FED INFANTS PER YEAR BY EXTENT OF FOLLOWING SELECTED HOSPITAL PRACTICES AND POLICIES CONCERNING BREAST-FEEDING, LOUISIANA, 1982

Practices	Number of Bresat-fed Infants by Practices			
	Always-Usually	Occasionally	Seldom-Never	F(29,38)
Breast-feeding by maternity patients.	474	163	17	4.37*
Rooming-in for breast-feeding patients.	220	503	136	3.58*
Demand feeding for breast-fed infants.	328	187	163	1.62
Structured breast-feeding schedule (such as every 4 hours).	237	350	274	0.35
Supplementary bottles of plain boiled water for breast-fed infants.	181	337	307	0.31
Supplementary bottles of water with sugar or syrup for breast-fed infants.	300	234	297	0.44
Supplementary bottles of proprietary cow's milk formula for breast-fed infants.	16	182	302	0.86
Supplementary bottles of soy formula for breast-fed infants.	128	262	282	1.26
Educational programs on breast-feeding for staff.	281	362	130	2.97

TABLE 25 (continued)

Practices	Number of Breast-Fed Infants by Practices			
	Always-Usually	Occasionally	Seldom-Never	F(29,38)
Educational programs on breast-feeding for patients.	336	204	125	2.84
Medication routinely given to patients to suppress lactation after delivery	233	557	507	2.47

Policies	Number of Breast-Fed Infants by Policies			
	Strongly Agree/ Agree	Undecided	Disagree/ Str. Disagree	F(29,38)
Hospital policy endorses breast-feeding as the best way to feed infants.	344	246	181	0.00
Hospital staff actively encourages patients to breast-feed.	357	176	189	0.35
Hospital staff is supportive of patients choosing to breast-feed.	283	64	-0-	0.09

*Significant at the 0.05 level of probability.
**Significant at the 0.01 level or probability

The hospitals reporting greater numbers of breast-fed infants reported either always/usually or occasional practice of rooming-in by breast-feeding patients. A mean of 503 breast-fed infants was related to the occasional practice of rooming-in by breast-feeding patients. A mean of 220 breast-fed infants was related to the always/usually category of practice while the seldom/never category had a mean of 136 breast-fed infants.

Comparison of Hospital Practices by Hospital Location

Tables 26-39 present information on the various hospital practices and policies as related to hospital location.

A significant difference ($P < 0.05$) was noted in the practice of rooming-in by breast-feeding patients as compared to hospital location (Table 36). A greater percentage of urban/suburban hospitals reported the practice of rooming-in at least occasionally (always/usually - 11 percent and occasionally - 50 percent) as compared to rural/small town hospital locations (always/usually - 13 percent and occasionally - 20 percent).

Time of Breast-Feeding Initiation

Table 40 presents the usual time of breast-feeding initiation by maternity patients in Louisiana hospitals. More than half of the hospitals reported that breast-feeding was initiated immediately or within 4 hours of delivery. Early initiation of breast-feeding has been recommended by many authorities as a means to stimulate milk production (4,7,8).

TABLE 26

A COMPARISON OF HOSPITAL LOCATION WITH FREQUENCY OF THE PRACTICE OF BREAST-FEEDING BY MATERNITY PATIENTS IN LOUISIANA HOSPITALS, 1982

Frequency of Practice	Percent by Hospital Location		
Breast-feeding by maternity patients	Rural/ Small Town (N = 54)	Urban/ Suburban (N = 28)	Total (N = 82)
Always - Usually	31	52	38
Occasionally	65	41	57
Seldom - Never	4	7	5
	100	100	100

X^2 not calculated due to inadequate cell frequency.

TABLE 27

A COMPARISON OF HOSPITAL LOCATION WITH FREQUENCY OF THE PRACTICE OF ROOMING-IN BY BREAST-FEEDING PATIENTS IN LOUISIANA HOSPITALS, 1982

Frequency of Practice	Percent by Hospital Location		
Rooming-in by breast-feeding patients	Rural/ Small Town (N = 54)	Urban/ Suburban (N = 28)	Total (N = 82)
Always - Usually	13	11	12
Occasionally	20	50	31
Seldom - Never	67	39	56
	100	100	100

$X^2 = 7.80$*

*Significant at the 0.05 level of probability

TABLE 28

A COMPARISON OF HOSPITAL LOCATION WITH FREQUENCY OF THE PRACTICE OF DEMAND FEEDING FOR BREAST-FED INFANTS IN LOUISIANA HOSPITALS, 1982

Frequency of Practice	Percent by Hospital Location		
Demand feeding for breast-fed infants	Rural/ Small Town (N = 54)	Urban/ Suburban (N = 28)	Total (N = 82)
Alway - Usually	65	50	60
Occasionally	18	25	21
Seldom - Never	17	25	19
	100	100	100

$X^2 = 1.71$

TABLE 29

A COMPARISON OF HOSPITAL LOCATION WITH FREQUENCY OF THE PRACTICE OF STRUCTURED FEEDING SCHEDULES FOR BREAST-FED INFANTS IN LOUISIANA HOSPITALS, 1982

Frequency of Practice	Percent by Hospital Location		
Structured breast-feeding schedule for infants	Rural/ Small Town (N = 54)	Urban/ Suburban (N = 28)	Total (N = 82)
Always - Usually	43	54	46
Occasionally	11	21	15
Seldom - Never	46	25	39
	100	100	100

$X^2 = 3.91$

TABLE 30

A COMPARISON OF HOSPITAL LOCATION WITH FREQUENCY OF THE PRACTICE OF SUPPLEMENTARY BOTTLES OF PLAIN BOILED WATER FOR BREAST-FED INFANTS IN LOUISIANA HOSPITALS, 1982

Frequency of Practice	Percent by Hospital Location		
Supplementary bottles of plain boiled water	Rural/ Small Town (N = 54)	Urban/ Suburban (N = 27)	Total (N = 81)
Always - Usually	35	37	36
Occasionally	9	26	15
Seldom - Never	56	37	49
	100	100	100

$X^2 = 4.64$

TABLE 31

A COMPARISON OF HOSPITAL LOCATION WITH FREQUENCY OF THE PRACTICE OF SUPPLEMENTARY BOTTLES OF WATER WITH SUGAR OR SYRUP FOR BREAST-FED INFANTS IN LOUISIANA HOSPITALS, 1982

Frequency of Practice	Percent by Hospital Location		
Supplementary bottles of water with sugar or syrup.	Rural/ Small Town (N = 53)	Urban/ Suburban (N = 28)	Total (N = 82)
Always - Usually	34	25	31
Occasionally	42	36	40
Seldom - Never	24	39	29
	100	100	100

$X^2 = 1.98$

TABLE 32

A COMPARISON OF HOSPITAL LOCATION WITH FREQUENCY OF THE PRACTICE OF SUPPLEMENTARY BOTTLES OF PROPRIETARY COW MILK FORMULA FOR BREAST-FED INFANTS IN LOUISIANA HOSPITALS, 1982

Frequency of Practice	Percent by Hospital Location		
Supplementary bottles of proprietary cow milk formula	Rural/ Small Town (N = 54)	Urban/ Suburban (N = 28)	Total (N = 82)
Always - Usually	7	-0-	5
Occasionally	17	21	18
Seldom - Never	76	79	77
	100	100	100

X^2 not calculated due to inadequate cell frequency.

TABLE 33

A COMPARISON OF HOSPITAL LOCATION WITH FREQUENCY OF THE PRACTICE OF SUPPLEMENTARY BOTTLES OF SOY FORMULA FOR BREAST-FED INFANTS IN LOUISIANA HOSPITALS, 1982

Frequency of Practice	Percent by Hospital Location		
Supplementary bottles of soy formula	Rural/ Small Town (N = 53)	Urban Suburban (N = 28)	Total (N = 81)
Always - Usually	2	7	4
Occasionally	13	14	13
Seldom - Never	85	79	83
	100	100	100

X^2 not calculated due to inadequate cell frequency

TABLE 34

A COMPARISON OF HOSPITAL LOCATION WITH FREQUENCY OF THE PRACTICE OF EDUCATIONAL PROGRAMS ON BREAST-FEEDING FOR STAFF IN LOUISIANA HOSPITALS, 1982

Frequency of Practice	Percent by Hospital Location		
Educational programs on breast-feeding for hospital staff	Rural/ Small Town (N = 53)	Urban Suburban (N = 28)	Total (N = 82)
Always - Usually	38	46	41
Occasionally	36	29	33
Seldom - Never	26	25	26
	100	100	100

$X^2 = 0.64$

TABLE 35

A COMPARISON OF HOSPITAL LOCATION WITH FREQUENCY OF THE PRACTICE OF EDUCATIONAL PROGRAMS ON BREAST-FEEDING FOR PATIENTS IN LOUISIANA HOSPITALS, 1982

Frequency of Practice	Percent by Hospital Location		
Educational programs on breast-feeding for patients	Rural/ Small Town (N = 55)	Urban/ Suburban (N = 28)	Total (N = 83)
Always - Usually	55	71	60
Occasionally	27	18	24
Seldom - Never	18	11	16
	100	100	100

$X^2 = 2.22$

TABLE 36

A COMPARISON OF HOSPITAL LOCATION WITH FREQUENCY OF THE PRACTICE OF MEDICATION TO SUPPRESS LACTATION ROUTINELY GIVEN TO PATIENTS FOLLOWING DELIVERY IN LOUISIANA HOSPITALS, 1982

Frequency of Practice	Percent by Hospital Location		
Medication to suppress lactation routinely given to patients	Rural/ Small Town (N = 54)	Urban/ Suburban (N = 27)	Total (N = 81)
Always - Usually	50	48	49
Occasionally	6	11	7
Seldom - Never	44	41	44
	100	100	100

X^2 not calculated due to inadequate cell frequency.

TABLE 37

A COMPARISON OF HOSPITAL LOCATION WITH FREQUENCY OF THE POLICY OF LOUISIANA HOSPITAL POLICY ENDORSEMENT OF BREAST-FEEDING FOR MOST INFANTS, 1982

Frequency of Practice	Percent by Hospital Location		
Hospital policy endorsement of breast-feeding as the best way to feed infants	Rural/ Small Town (N = 53)	Urban/ Suburban (N = 28)	Total (N = 81)
Always - Usually	47	50	48
Occasionally	28	21	26
Seldom - Never	25	29	26
	100	100	100

$X^2 = 0.48$

TABLE 38

A COMPARISON OF HOSPITAL LOCATION WITH FREQUENCY OF THE POLICY OF ACTIVE ENCOURAGEMENT OF PATIENTS TO BREAST-FEED BY LOUISIANA HOSPITAL STAFF, 1982

Frequency of Practice	Percent by Hospital Location		
Hospital staff actively encourages breast-feeding for patients	Rural/ Small Town (N = 52)	Urban/ Suburban (N = 28)	Total (N = 80)
Always - Usually	52	54	52
Occasionally	21	14	19
Seldom - Never	27	32	29
	100	100	100

$X^2 = 0.66$

TABLE 39

A COMPARISON OF HOSPITAL LOCATION WITH FREQUENCY OF THE POLICY OF SUPPORT OF PATIENTS CHOOSING TO BREAST-FEED BY STAFF IN LOUISIANA HOSPITALS, 1982

Frequency of Practice	Percent by Hospital Location		
Hospital staff is supportive of breast-feeding patients	Rural/ Small Town (N = 54)	Urban/ Suburban (N = 28)	Total (N = 82)
Always - Usually	94	96	95
Occasionally	6	-0-	4
Seldom - Never	-0-	4	1
	100	100	100

X^2 not calculated due to inadequate cell frequency

TABLE 40

TIME OF BREAST-FEEDING INITIATION IN LOUISIANA HOSPITALS, 1982

Hours Following Delivery	N	Hospitals by Percent
Immediately	19	23
1 - 4 hours	28	34
Over 4 hours	35	43
Total	82	100

Chapter V

SUMMARY, FINDINGS AND RECOMMENDATIONS

Statement of the Problem

Breast-feeding has been recommended as the desirable way to feed infants but many women are still choosing to bottle-feed their infants (4,5,6,7). Medical recommendations and hospital practices have been reported to play major roles in determining how a woman chooses to feed her infant. Studies have shown that physicians often do not provide encouragement to breast-feed or information to manage breast-feeding successfully (4,5,6,7,8). Hospitals have also been shown to have routines, such as supplementary bottles and delayed initiation time of breast-feeding, which are not conducive to lactation (9,10).

Purpose of the Study

This study was designed to determine the breast-feeding recommendations of four physician specialization areas (family practitioners, general practitioners, obstetricians and pediatricians) in Louisiana and to determine breast-feeding practices in Louisiana hospitals.

Specific Study Objectives

Physicians.

1. To identify Louisiana physicians' opinions as to the importance of breast-feeding by area of specialization (family practitioners, general practitioners, obstetricians/gynecologists and pediatricians).

2. To identify breast-feeding recommendations of Louisiana physicians.

3. To determine differences in breast-feeding recommendations by physicians' areas of specialization.

4. To determine differences in breast-feeding recommendations by location of physicians' practices.

5. To determine differences in breast-feeding recommendations by physicians' year of medical school graduation.

6. To determine differences in breast-feeding recommendation by physicians' own infants' feeding method.

Hospitals.

1. To identify medical practices concerning breast-feeding in Louisiana hospitals providing maternity services.

2. To determine differences in hospital breast-feeding practices by hospital location.

3. To determine differences in hospital breast-feeding practices by hospital size.

4. To determine differences in hospital breast-feeding practices by number of breast-feeding infants in hospital.

5. To determine differences in hospital breast-feeding practices by initiation time of breast-feeding after delivery.

Methodology

Physicians. Stratified random sampling was used to select the sample of 400 names, 100 in each of four physician categories (family practitioners, general practitioners, obstetricians and pediatricians) obtained from the Louisiana State Medical Society. A three-page questionnaire, developed to obtain information on breast-feeding recommendations, and a letter explaining the study were mailed to the physicians. A follow-up letter and another questionnaire were mailed to those physicians who had not responded within three weeks.

Data from the questionnaire were handcoded and analyzed at the Louisiana State University Computer Center in terms of specific objectives. An analysis of variance using the F test was used to determine a measure of significance of the difference between means.

Hospitals. The names and addresses of Louisiana hospitals providing maternity services were obtained from Vital Statistics, Department of Health and Human Resources. Ninety-four hospitals reporting birth rates of at least twenty-five births were chosen for participation in the study.

A one-page questionnaire, designed to obtain information on hospital breast-feeding practices, and a letter explaining the study were mailed to the hospitals. A follow-up letter and another questionnaire were mailed to those hospitals not responding within three weeks.

Data from the questionnaire were handcoded and analyzed at the Louisiana State University Computer Center. An analysis of variance using the F test and Chi square were used to determine a measure of significance of the difference between means.

Hospitals - Findings and Conclusions

Most reports from Louisiana hospitals showed that breast-feeding was only occasionally practiced by maternity patients. Most of the hospitals agreed that staff members were supportive of breast-feeding patients but were undecided about whether or not hospital policy endorsed breast-feeding as the best way to feed infants or if staff actively encouraged patients to choose breast-feeding.

Rooming-in by breast-feeding patients was reported to be only an occasional practice while that of giving supplementary bottles to breast-fed infants was reported to be routine. The practice of conducting educational programs on breast-feeding for hospital staff was only an occasional occurrence.

From the response rate (88 percent), Louisiana hospitals appeared to be interested in the subject of breast-feeding. Practices associated positively with breast-feeding success which were reported by Louisiana hospitals included breast-feeding on demand and educational programs on breast-feeding for maternity patients. Early initiation of breast-feeding ($\leq$ four hours) was also a more common occurrence in Louisiana hospitals than delayed initiation.

The following differences in breast-feeding practices were determined to be statistically significant. Rooming-in by breast-feeding patients was found to have statistically significant relationships to hospital size, number of births, number of breast-fed infants and location. A greater percentage of urban/suburban hospitals reported the practice of rooming-in by breast-feeding patients as compared to rural/small town hospitals.

The larger hospitals and those with larger birth rates and larger numbers of breast-fed infants reported the occasional practice of rooming-in for breast-feeding patients while the smaller hospitals and those with smaller birth rates and smaller numbers of breast-fed infants reported being about equally divided between usually practicing rooming-in and seldom or never practicing this.

Larger hospitals also appeared to have staff which were more

supportive of breast-feeding patients than smaller hospitals. There was one exception to this - one large hospital with a very large birth rate reported that staff never supported breast-feeding patients. The spokesman for this hopsital wrote a comment on the questionnaire which explained that breast-feedingwas not practiced at all at this hospital but that plans were being made to allow breast-feeding shortly.

Time of breast-feeding initiation was inversely related to the practice of breast-feeding in Louisiana hospitals with the fewer number of hours between delivery and initiation of breast-feeding related to increased numbers of breast-fed infants. Also, in the same manner, the shorter the initiation time of breast-feeding, the more supportive staff in Louisiana hospitals was reported to be of breast-feeding patients.

A positive association was found between those hospitals reporting that breast-feeding was always or usually practiced and the actual number of breast-fed infants in those hospitals. Hospitals that reported breast-feeding was always or usually practiced also reported larger numbers of breast-feeding patients.

Recommendations

From the findings of this study and because of the research reports cited in the literature review, the following recommendations are presented which may help to promote breast-feeding in Louisiana.

1. Breast-feeding should be included in the curricula of medical schools Information should be current and factual with as much emphasis on breast-feeding as on bottle-feeding and formulas.

2. Breast-feeding should be included in the curricula of other health professionals (nurses, dietitians, etc.), as well as paraprofessionals (aides, technicians, etc.).
3. Information on breast-feeding should be included in health or nutrition classes in schools for both girls and boys.
4. Physicians should be aware of the importance of breast-feeding and actively encourage mothers to breast-feed if at all possible.
5. Obstetricians should discuss breast-feeding at a patient's first prenatal visit and regularly on subsequent visits.
6. Physicians' offices should have information on breast-feeding available in patients' waiting rooms.
7. Current factual information on breast-feeding management and enthusiastic support should be given to breast-feeding mothers following hospital discharge by pediatricians or family physicians.
8. Information on breast-feeding should be made available by institutions and organizations concerned with the well-being of mothers and children (hospitals, community health agencies, cooperative extension, etc.) through public policy and the creation and dissemination of information by various methods.
9. Hospitals should make revisions in practices and routines where necessary to facilitate breast-feeding by patients.
10. Hospitals should offer educational programs on breast-feeding to staff members.
11. Hospitals should assign staff members who have successfully breast-fed their own children to help new breast-feeding mothers.

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APPENDICES

APPENDIX A

Breast-Feeding Recommendations of Louisiana Physicians

BREAST-FEEDING RECOMMENDATIONS OF LOUISIANA PHYSICIANS

Louisiana State University
Dept. of Extension Education

Dept. of Health and Human Resources
Office of Health Services and Environmental Quality, Nutrition Section

DIRECTIONS: Please check (√) your responses in the appropriate spaces. Responses will be used for research purposes only; all responses are confidential.

1. How important do you think breast-feeding is for the well-being of infants in America today?

- Very Important ☐
- Important ☐
- Somewhat Important ☐
- Unimportant ☐

2. To what extent do you agree or disagree with the following statements?

	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
a. Breast milk is the best form of nourishment for infants.					
b. Most infants should receive only breast milk for the first 6 months of life.					
c. Most women should be encouraged by their physicians to breast-feed their infants.					
d. Breast-fed infants are less likely to have serious respiratory infections than bottle-fed.					
e. Breast-fed infants are less likely to have serious gastrointestinal infections than bottle-fed.					
f. Breast-fed infants are less likely to have allergic conditions than bottle-fed.					
g. An advantage of breast-feeding is that mothers do not know the amount of milk consumed.					
h. Breast-feeding often develops a special bonding relationship between mother and infant not achieved with bottle-feeding					
i. Breast-feeding is more economical than bottle-feeding.					
j. Breast-feeding is usually contraindicated with C-Section.					
k. Breast-feeding is usually contraindicated with premature infants.					
l. Breast-feeding is usually contraindicated with maternal diabetes.					
m. Breast-feeding is usually contraindicated if a woman plans to continue working away from home after baby's birth.					

3. To what extent do you recommend the following practices concerned with breast-feeding.

	Always	Usually	Occasionally	Seldom	Never
a. Breast-feeding of infants for most women.					
b. Preparation of breasts before delivery.					
c. Rooming-in during hospital stay.					
d. Breast-feeding only for infants' first 6 months of life.					
e. Breast-feeding on demand.					
f. Structured breast-feeding schedule (such as every 4 hours).					
g. Nursing at both breasts at each feeding.					
h. Supplemental bottles of plain boiled water.					
i. Supplemental bottles of water with sugar or syrup.					
j. Supplemental bottles of proprietary cow's milk formula.					
k. Supplemental bottles of soy milk formula.					
l. Continuing to nurse with mastitis.					
m. Introduction of foods before 6 months of age to breast-fed infants.					
n. Iron supplementation for breast-fed infants.					
o. Fluoride supplementation for breast-fed infants.					
p. Vitamin D supplementation for breast-fed infants.					
q. Oral contraceptives for breast-feeding mothers.					

4. When do you usually discuss each of the following aspects of breast-feeding with patients? (Please check all that apply.)

	Usually Discuss Prenatally	Usually Discuss Postnatally	Usually Don't Discuss
a. Anatomy of breasts			
b. Physiology of lactation			
c. Techniques of breast-feeding			
d. Let-down reflex			
e. Preparation of breasts for breast-feeding			
f. Care of breasts during breast-feeding			
g. Maternal diet			
h. Management of problems (engorgement, sore nipples, mastitis, etc.)			

5. Under normal delivery conditions for patients planning to breast-feed, how soon do you feel breast-feeding should be initiated after delivery?

   Number of hours following delivery _____

   If immediately following delivery, please check here ☐

6. If you feel any mothers should be discouraged from breast-feeding, please give reason(s).

_____

_____

7. Was information you received in medical school on breast-feeding too much, sufficient or not enough?

   Too much ☐
   Sufficient ☐
   Not enough ☐

8. Please place a check beside your area and place of practice.

   a. Area of practice

      Family Practice ☐
      General Practice ☐
      Obstetrics/Gynecology ☐
      Pediatrics ☐

   b. Place of practice

      Rural ☐
      Small Town ☐
      Urban/Suburban ☐

9. Year of medical school graduation_____

10. Your sex (Please check one)

    Female ☐
    Male ☐

11. Were any of your children breast-fed? (Please check one)

    Yes ☐
    No ☐
    Don't know ☐
    Don't have children ☐

Thank you for your cooperation. Please return to Beth Reames, Nutritionist , P.O. Box 762, Baton Rouge, La. 70821. A self-addressed, stamped envelope is enclosed for your convenience.

APPENDIX B

Breast-Feeding Practices in Louisiana Hospitals

BREAST-FEEDING PRACTICES IN LOUISIANA HOSPITALS

Louisiana State University
Dept. of Extension Education

Dept. of Health and Human Resources
Office of Health Services and Environmental Quality, Nutrition Section

DIRECTIONS: Please check (✓) your responses in the appropriate spaces. Responses will be used for research purposes only; all responses are confidential.

1. To what extent are the following practiced in your hospital?

	Always	Usually	Occasionally	Seldom	Never
a. Breast-feeding by maternity patients.					
b. Rooming-in for breast-feeding patients.					
c. Demand feeding for breast-fed infants.					
d. Structured breast-feeding schedule (such as every 4 hours).					
e. Supplementary bottles of plain boiled water for breast-fed infants.					
f. Supplementary bottles of water with sugar or syrup for breast-fed infants.					
g. Supplementary bottles of proprietary cow's milk formula for breast-fed infants.					
h. Supplementary bottles of soy formula for breast-fed infants.					
i. Educational programs on breast-feeding for staff.					
j. Educational programs on breast-feeding for patients.					
k. Medication routinely given to patients to suppress lactation after delivery.					

2. To what extent do you agree or disagree with the following concerning your hospital?

	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
a. Hospital policy endorses breast-feeding as the best way to feed infants.					
b. Hospital staff actively encourages patients to breast-feed.					
c. Hospital staff is supportive of patients choosing to breast-feed.					

3. Under normal delivery conditions for patients planning to breast-feed, how soon is breast-feeding usually initiated after delivery in your hospital?

Number of hours following delivery _____

If immediately following delivery, please check here ☐

Please provide the following general information.

4. Hospital Size (Number of beds) _____

5. Type of Hospital (Please check one)
   General ☐
   Maternity ☐

6. Hospital Location (Please check one)
   Rural ☐
   Small Town ☐
   Urban/Suburban ☐

7. Approximate number of live births in hospital (Jan. 1 - Dec. 31, 1981)_____

8. Approximate number of breast-fed infants in hospital (Jan. 1-Dec. 31,1981)_____

Thank you for your cooperation. Please return to: Beth Reames, Nutritionist, P.O. Box 762, Baton Rouge, La. 70821. A self-addressed, stamped envelope is enclosed for your convenience.

APPENDIX C

Letter to Medical Society President

State of Louisiana
DEPARTMENT OF HEALTH AND HUMAN RESOURCES
OFFICE OF HEALTH SERVICES AND ENVIRONMENTAL QUALITY
P. O. BOX 60630
NEW ORLEANS, LOUISIANA 70160
(504) 568-5050

DAVID C. TREEN
GOVERNOR

GEORGE A. FISCHER
SECRETARY

Dear Medical Society President:

Medical recommendations and practices have been reported to play a major role in determining the feeding method a mother chooses for her infant. Breast-feeding is currently being recommended as the desirable way to feed infants, but many women are still choosing bottle-feeding.

Mrs. Bet. Reames, Nutritionist with our Nutrition Section, is undertaking a study to determine physicians' recommendations and hospital practices in the state regarding breast-feeding as part of her work toward a doctoral degree at Louisiana State University.

She will soon be mailing questionnaires to randomly selected obstetricians, pediatricians, general practitioners and family practitioners requesting information. She will also be sending a separate questionnaire to administrators of hospitals in the state providing maternity services.

Your cooperation in letting physicians and hospital administrators in your area know about this study and encouraging them to return the questionnaires will be greatly appreciated.

Sincerely,

Sara. Braud, M.D.
Health Deputy Assistant Secretary

APPENDIX D

Letter to Physicians

State of Louisiana
DEPARTMENT OF HEALTH AND HUMAN RESOURCES
OFFICE OF HEALTH SERVICES AND ENVIRONMENTAL QUALITY
BATON ROUGE DISTRICT
HANDICAPPED CHILDREN SECTION
P. O. BOX 752
BATON ROUGE LOUISIANA 70821

DAVID C. TREEN
GOVERNOR

GEORGE A. FISCHER
SECRETARY

January 4, 1982

Dear Physician:

I am a nutritionist with the Department of Health and Human Resources, Nutrition Section, and am conducting a research project in conjunction with the Department of Extension Education, Louisiana State University.

Studies have shown that medical practices and recommendations play a major role in determining the method which mothers choose to feed their infants. Although breast-feeding is currently being recommended, many women still choose to bottle-feed their infants.

Your help is needed to indicate what breast-feeding practices are being recommended by Louisiana physicians. This information will help in providing more comprehensive services as nutritionists to our prenatal and postpartal patients.

Will you please take a few minutes to complete the enclosed questionnaire so that we may have your input? Please return the questionnaire by January 22 in the enclosed, stamped envelope. All responses will be confidential.

Your cooperation is greatly appreciated.

Sincerely,

Beth Reames

Beth Reames, R.D.
Nutritionist

APPENDIX E

Second Letter to Physicians

DAVID C. TREEN
GOVERNOR

State of Louisiana
DEPARTMENT OF HEALTH AND HUMAN RESOURCES
OFFICE OF HEALTH SERVICES AND ENVIRONMENTAL QUALITY
BATON ROUGE DISTRICT
HANDICAPPED CHILDREN SECTION
P. O. BOX 792
BATON ROUGE, LOUISIANA 70821

GEORGE A. FISCHER
SECRETARY

January 20, 1982

Dear Physician:

Recently I wrote you about the study we are doing on Breast-feeding Practices in Louisiana. A questionnaire soliciting your recommendations was enclosed. As of this date, I have not received your reply.

I realize that you have a busy schedule but your response will make the study more comprehensive. Please complete the questionnaire and return it by February 15. Another questionnaire and self-addressed, stamped envelope are enclosed for your convenience.

Your cooperation will be greatly appreciated.

Sincerely,

Beth Reames, R.D.
Nutritionist

P.S. Please disregard if you have already mailed your questionnaire.

APPENDIX F

Letter to Hospital Administrators

State of Louisiana
DEPARTMENT OF HEALTH AND HUMAN RESOURCES
OFFICE OF HEALTH SERVICES AND ENVIRONMENTAL QUALITY
BATON ROUGE DISTRICT
HANDICAPPED CHILDREN SECTION
P O BOX 762
BATON ROUGE LOUISIANA 70821

DAVID C TREEN
GOVERNOR

GEORGE A. FISCHER
SECRETARY

January 4, 1982

Dear Hospital Administrator:

I am a nutritionist with the Department of Health and Human Resources, District [illegible] Section, and am conducting a research project in conjunction with the Department of Extension Education, Louisiana State University.

Studies have shown that medical practices and recommendations play a major role in determining the method which mothers choose to feed their infants. Although breast-feeding is currently being recommended, many women still choose to bottle-feed their infants.

Your help is needed to indicate what the practices concerning breast-feeding in Louisiana hospitals are at this time. This information will help in providing more comprehensive services as nutritionists to our prenatal and postpartal patients.

Will you please take a few minutes to complete the enclosed, one-page questionnaire so that we may have your input. Please return the questionnaire by January 22 in the enclosed, stamped envelope. All responses will be confidential.

Your cooperation is greatly appreciated.

Sincerely,

Beth Reames

Beth Reames, R.D.
Nutritionist

APPENDIX G

Second Letter to Administrators

DAVID C. TREEN
GOVERNOR

State of Louisiana
DEPARTMENT OF HEALTH AND HUMAN RESOURCES
OFFICE OF HEALTH SERVICES AND ENVIRONMENTAL QUALITY
BATON ROUGE DISTRICT
HANDICAPPED CHILDREN SECTION
P O BOX 762
BATON ROUGE, LOUISIANA 70821

GEORGE A. FISCHER
SECRETARY

January 26, 1982

Dear Administrator:

Recently I wrote you about the study we are doing on Breast-feeding Practices in Louisiana. A questionnaire soliciting your recommendations was enclosed. As of this date, I have not received your reply.

I realize that you have a busy schedule, but your response will make the study more comprehensive. Please complete the questionnaire and return it by February 15. Another questionnaire and self-addressed, stamped envelope are enclosed for your convenience.

Your cooperation will be greatly appreciated.

Sincerely,

Beth Reames

Beth Reames, R.D.
Nutritionist

P. S. Please disregard if you have already mailed your questionnaire.

VITA

Elizabeth (Beth) Reames was born in Eglin Field, Florida. She graduated from DeQuincy High School, DeQuincy, Louisiana. She received a Bachelor of Science degree in Home Economics from Louisiana State University, Baton Rouge, Louisiana in May, 1968.

She completed a dietetic internship at the Veteran's Administration Hospital, Houston, Texas, in August, 1969. She was graduated from Louisiana State University with a Master of Science degree in food and nutrition in the School of Home Economics, in May, 1973.

Her parents are Mr. and Mrs. Samuel E. Snider of DeQuincy, Louisiana. She is married to Louis E. Reames, Jr., and they live in Baton Rouge where is is an architect in private practice.

EXAMINATION AND THESIS REPORT

Candidate: Elizabeth Snider Reames

Major Field: Extension Education

Title of Thesis: Breast-Feeding Survey in Louisiana, 1982: Physicians' Recommendations and Hospital Practices

Approved:

Major Professor and Chairman

Dean of the Graduate School

EXAMINING COMMITTEE:

Date of Examination:

November 16, 1982